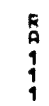


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DATE LAST EC
02-09-71 571150 P.N. 5889255

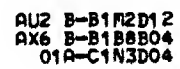
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4-1-DR

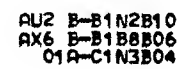




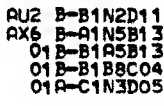
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A AND U REGISTER
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FRAME 01
IBM COMP. GPD
DATE LAST EC
02-09-71 571150
P.No. 5889258

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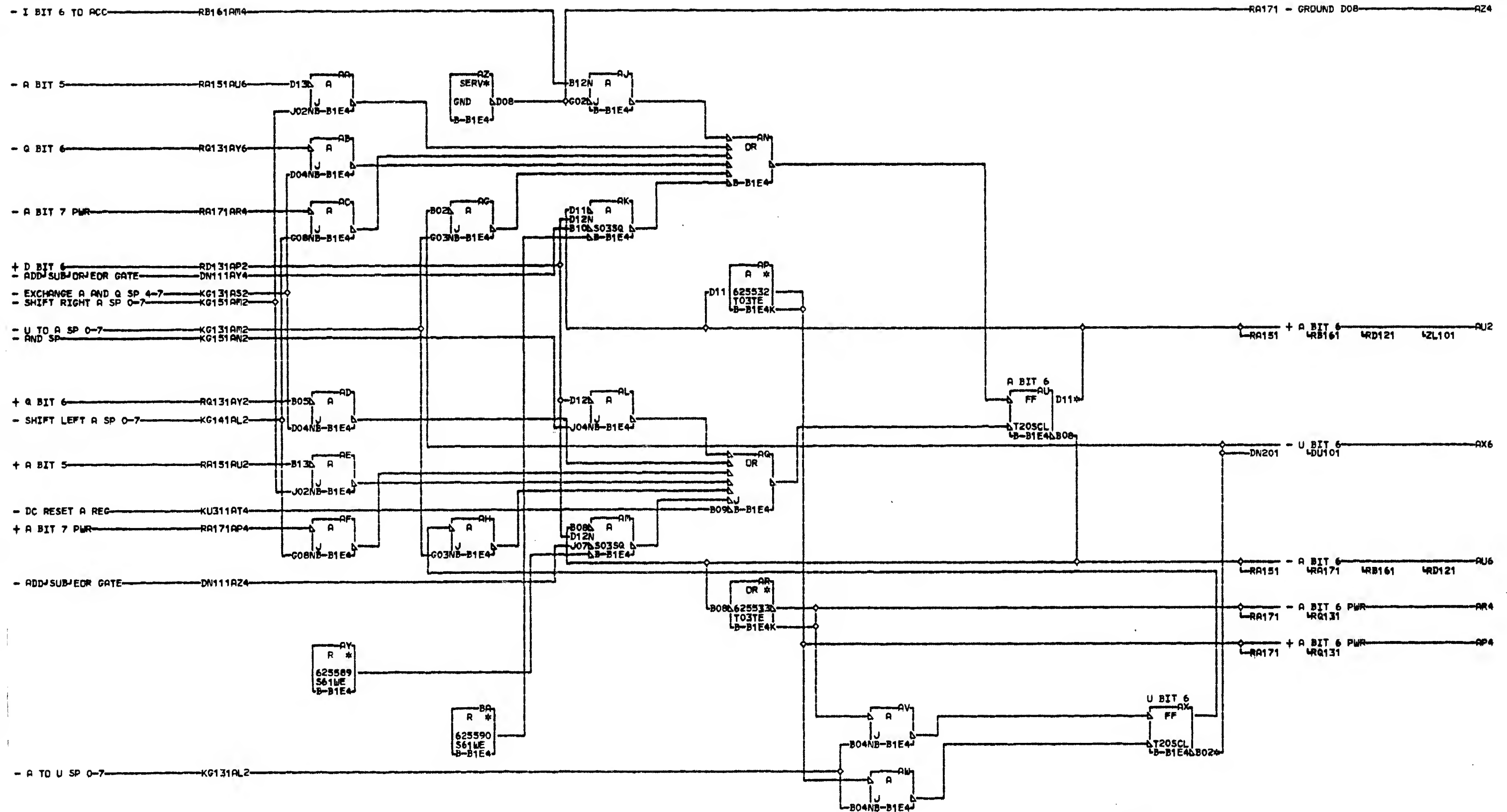
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DATE	FRAME 01
LAST EC	IBM CORP. GPD
02-09-71 571150	P.N. 5689259



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02-09-71  571150
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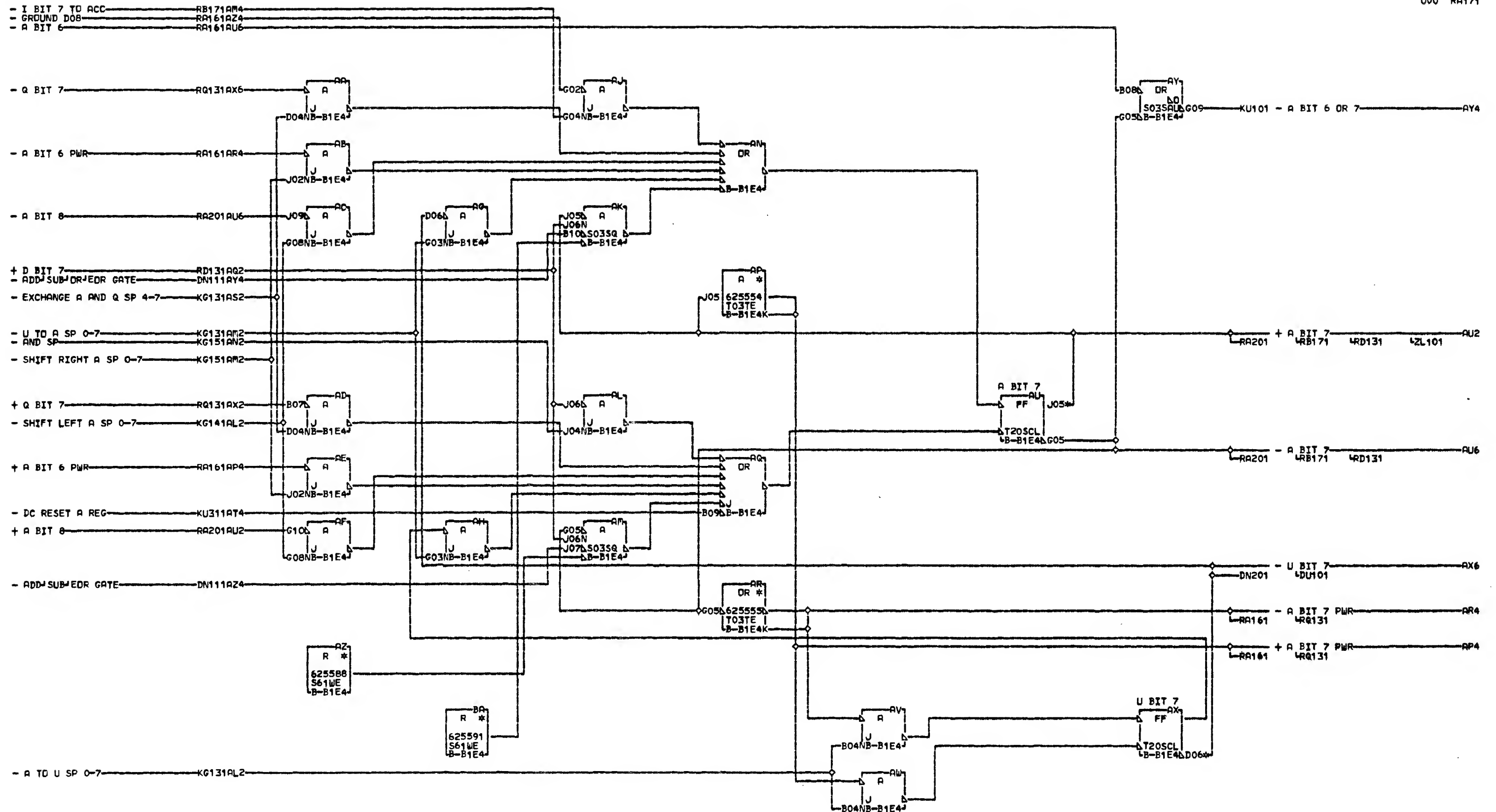
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LOC. TYPE  
B-B1E4 6255

A AND U REGISTERS		R A 1 6 1  000
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02-09-71	571150	P.N. 5889261

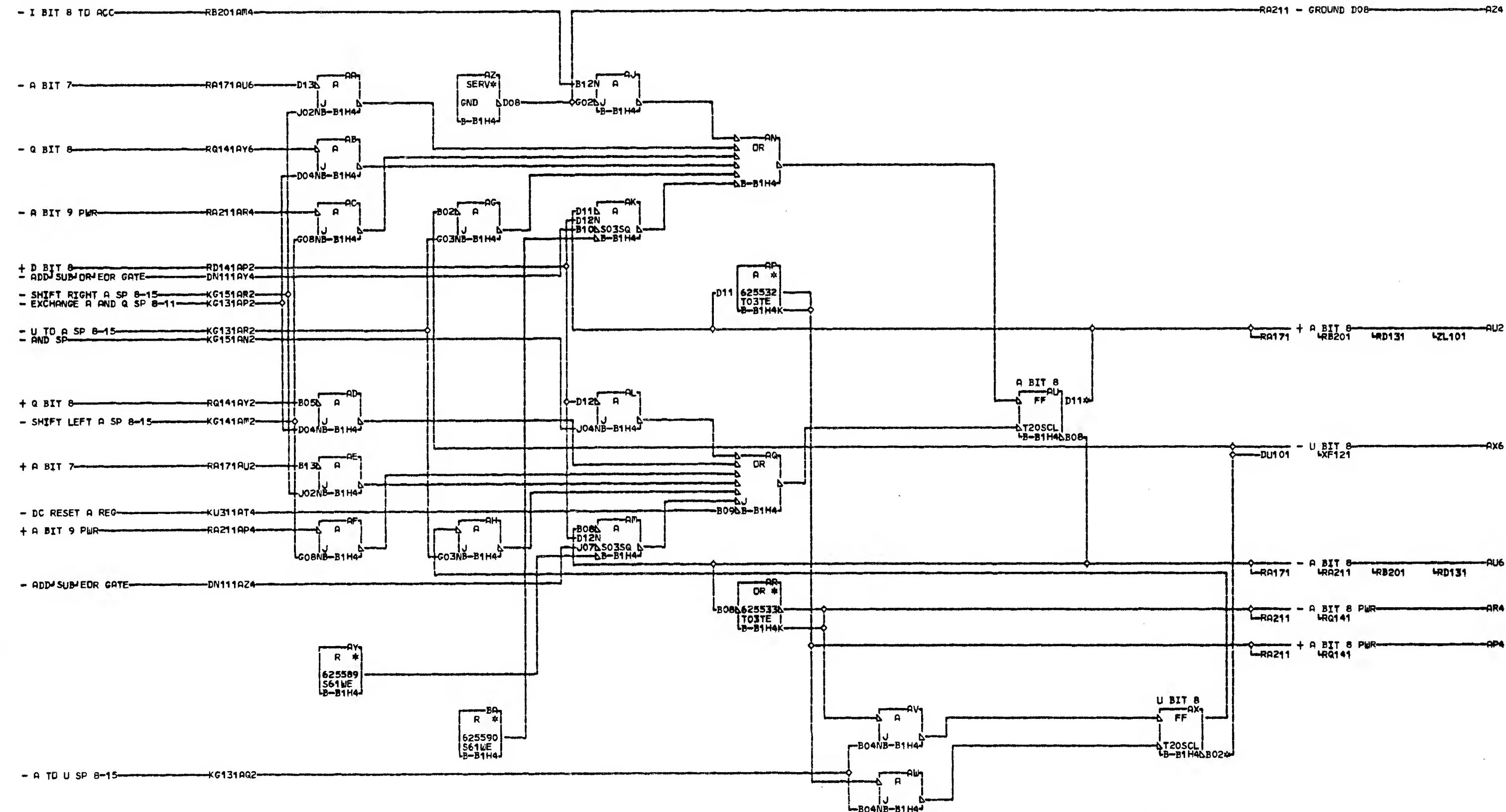


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LOC. TYPE  
 B-B1E4 6255

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DATE	LAST EC
02-09-71	571150
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IBM CORP.	GPD
P.N.	5889262



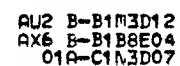


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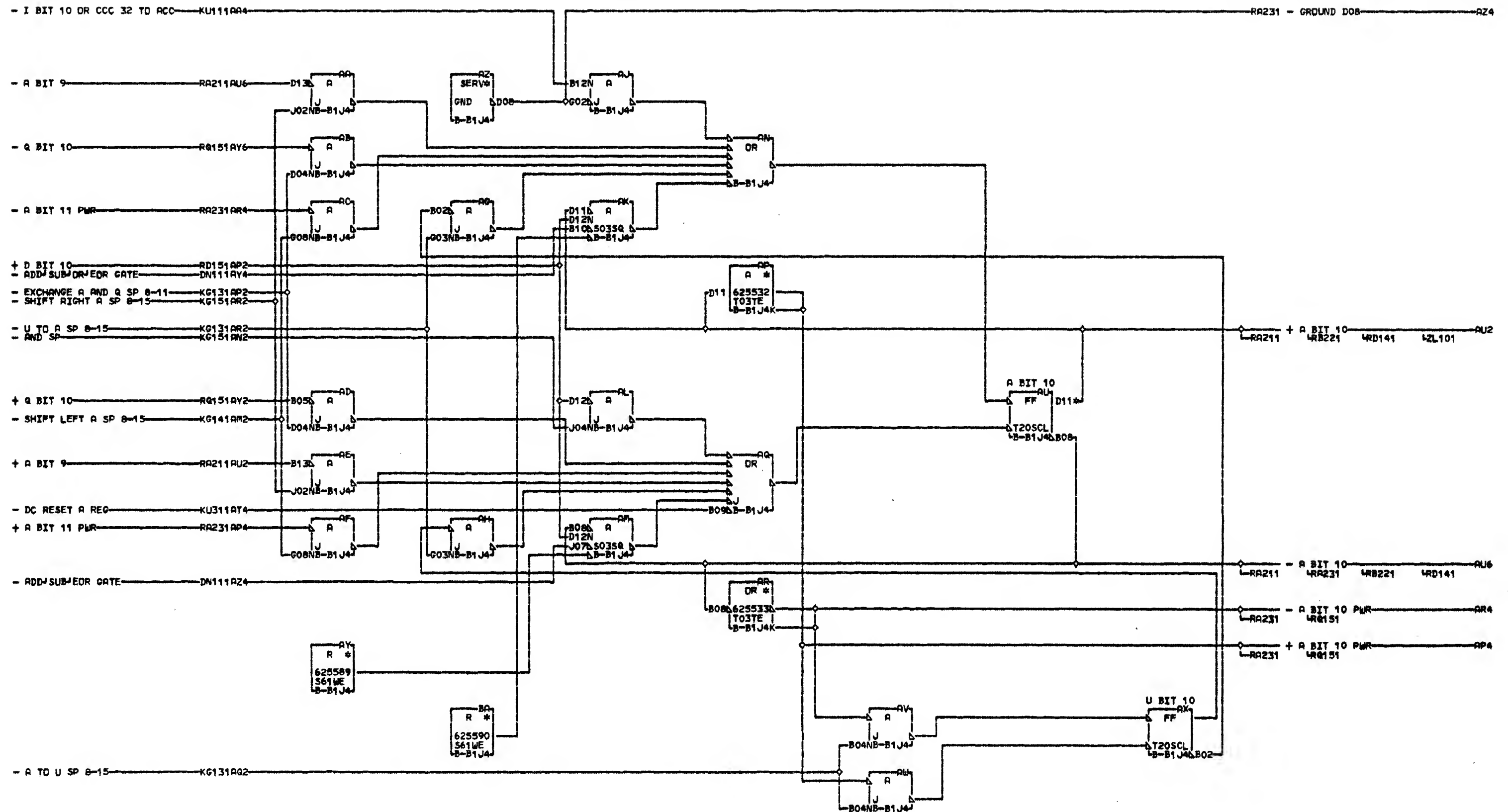
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P.N.	5889263

RA201  
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A AND U REGISTER	
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02-09-71 571150	P.N. 5889264

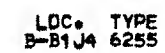


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LOC. TYPE  
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IBM CORP. GSD	P.O. 5889265

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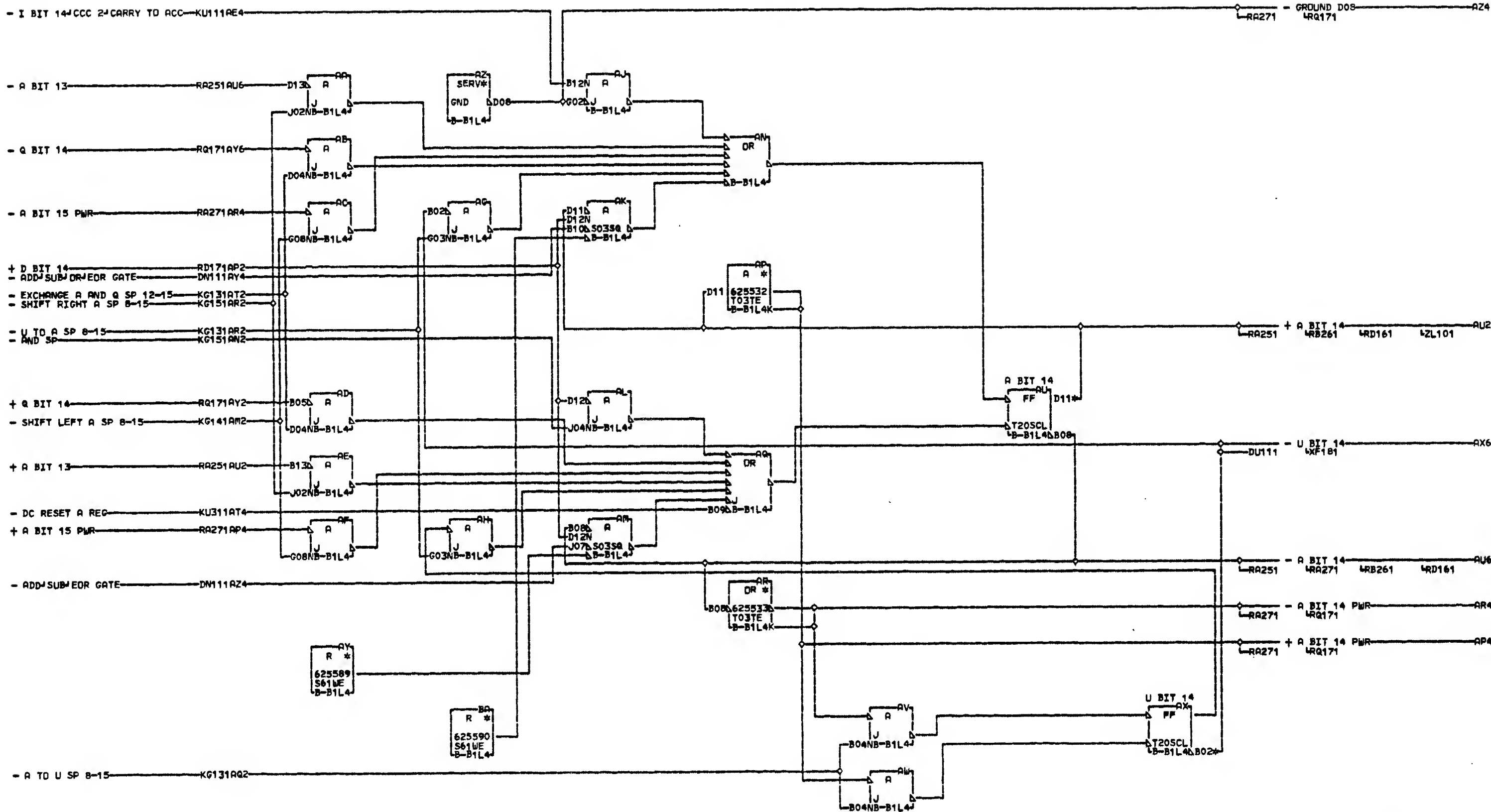


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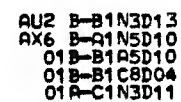


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LOC. TYPE  
B-B1L4 6255

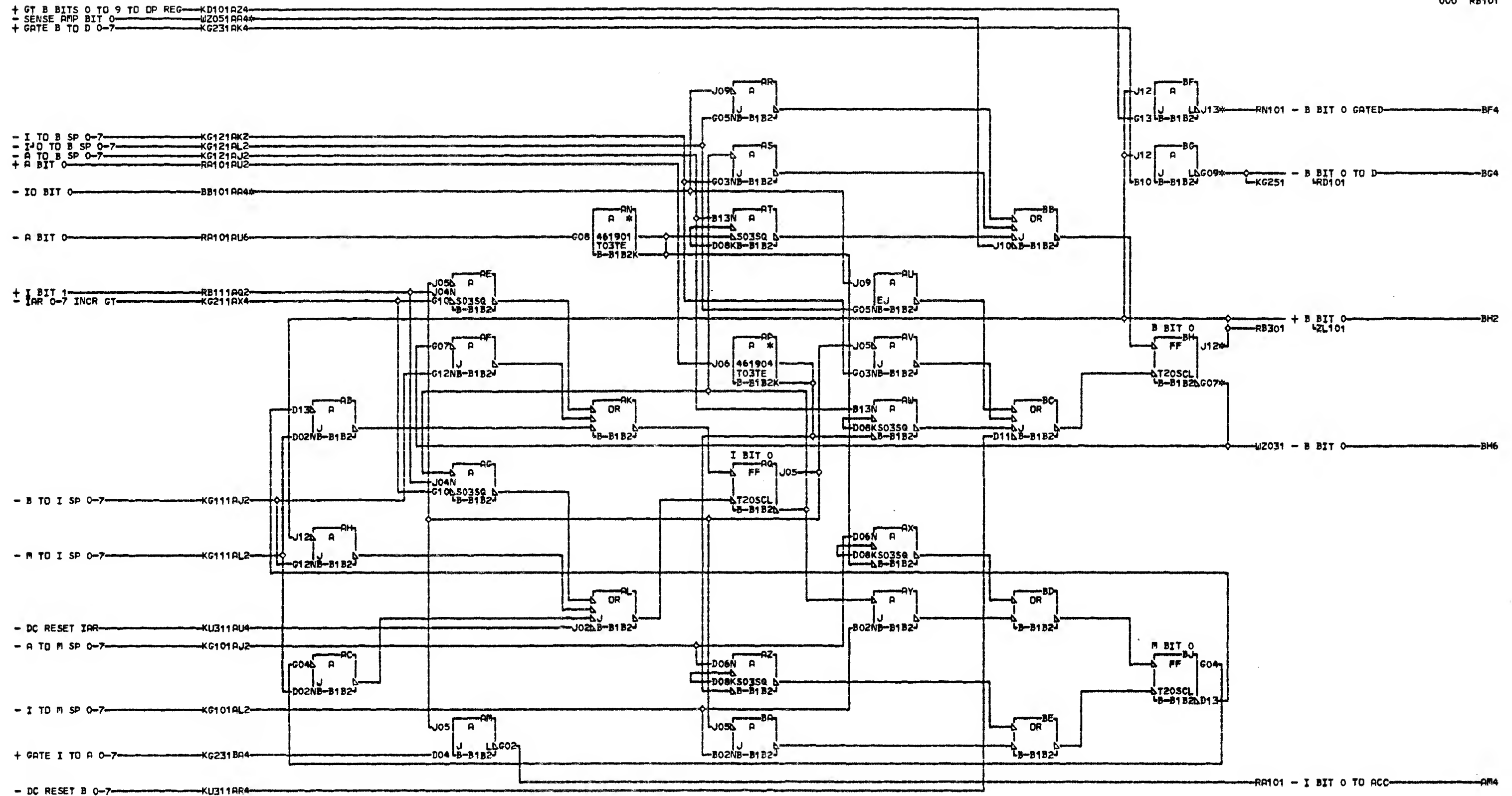
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FRAME	01
DATE	LAST EC
02-09-71	571150
P-N	5889269

RA261



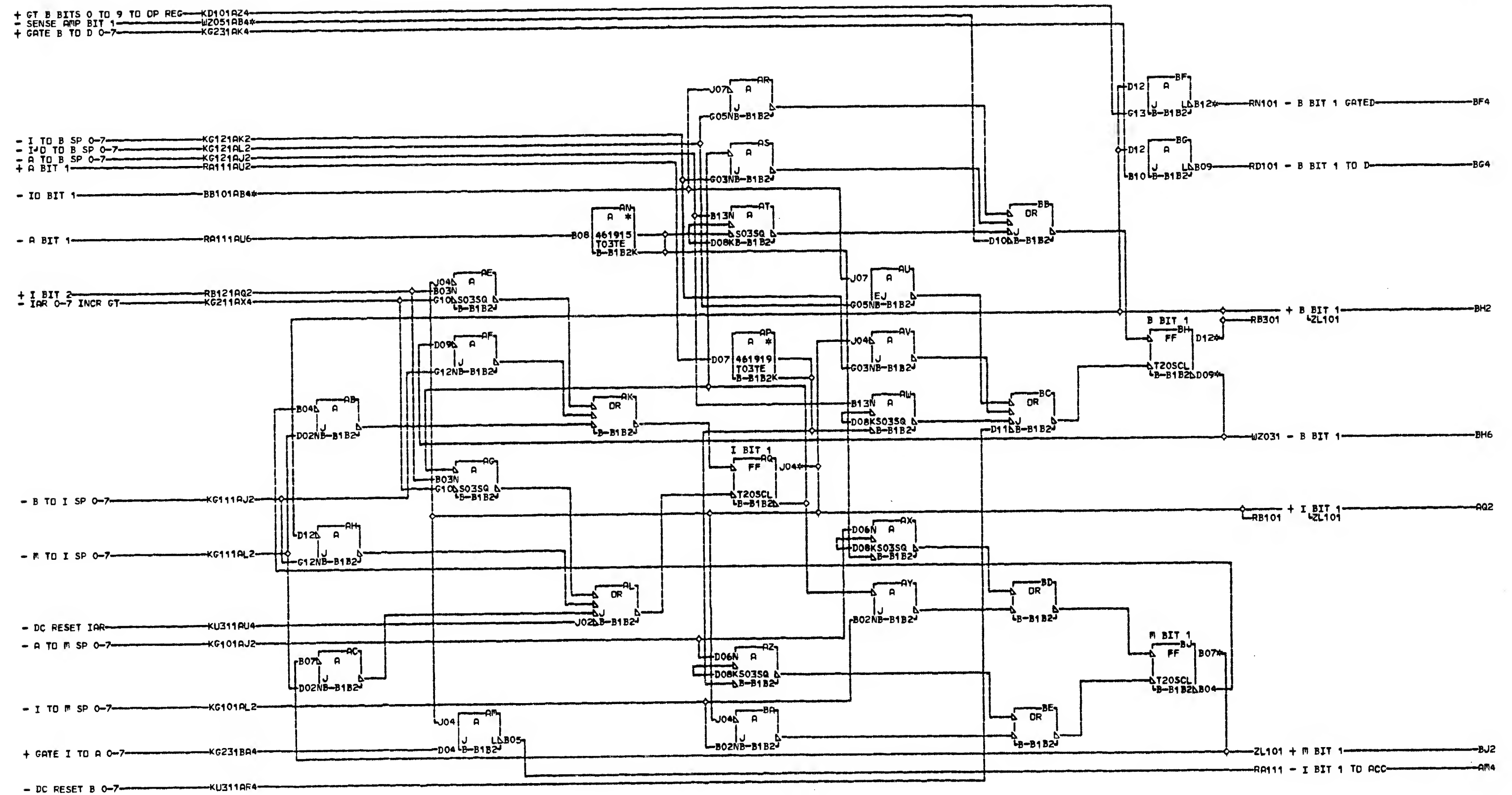
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DATE	FRAME 01
LAST EC	IBM CORP. GPD
02-09-71 571150	P.N. 5889270




 LOC. TYPE  
 B-B1B2 4619

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DATE	LAST EC	000
02-09-71	571150	
FRAME	01	
IBM CORP. GSD		
P.No. 5889271		

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 RESISTOR BH2 B-B1M3B02  
 B-B1B2J09 RESISTOR  
 W2051AA4 B-B1B2J12  
 RESISTOR BH6 B-B1B1A09  
 B-B1B2J10 01B-B1A1E09  
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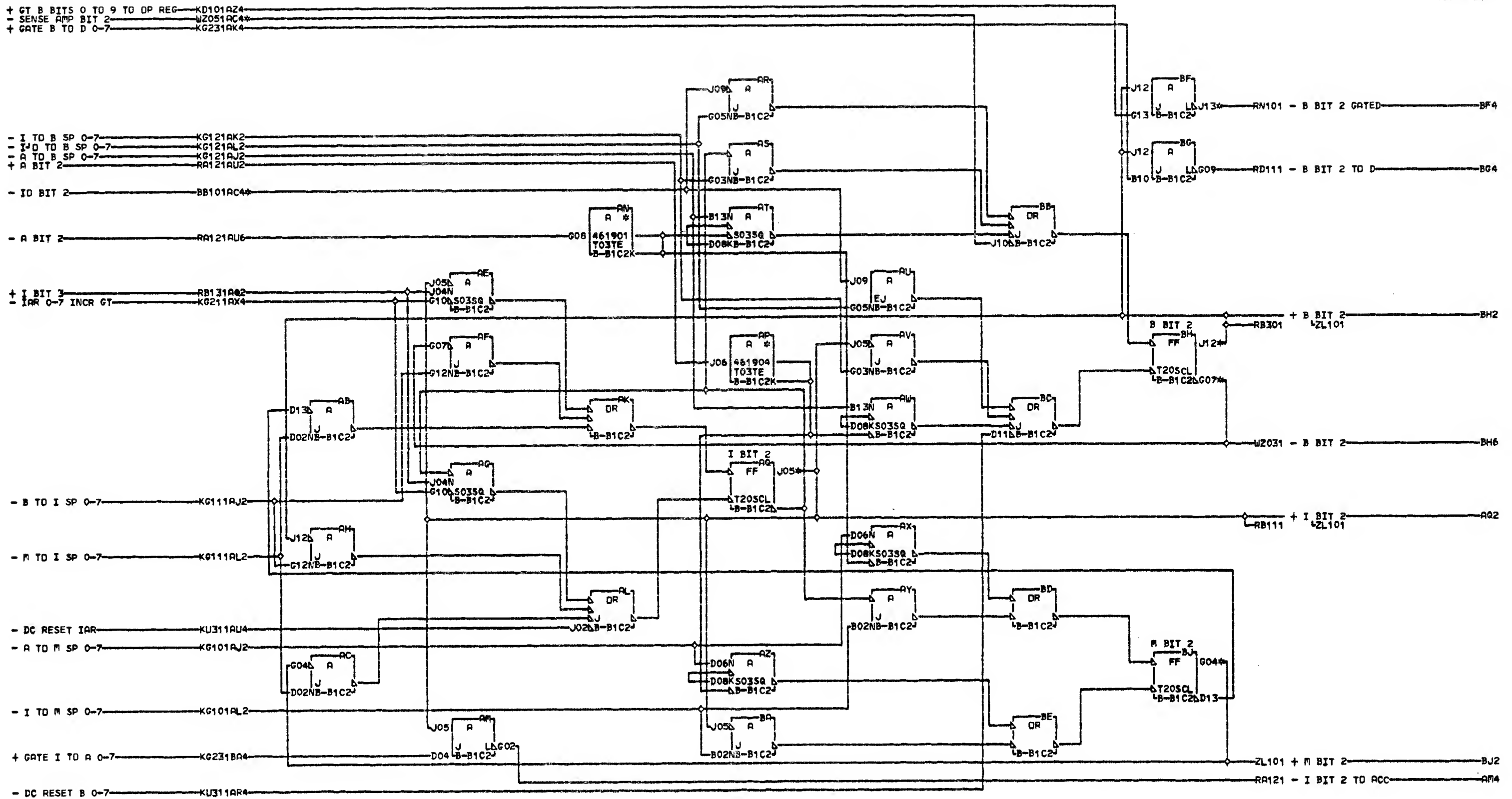
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 BF4 B-B1A2B10  
 01B-A1N2B10

BH2 B-B1M3D02  
 B-B1E2D12  
 BH6 B-B1B1B09  
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LOC. TYPE  
 B-B1B2 4619

I B AND M REGISTERS		BIT 1
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DATE	LAST EC	FRAME 01
02-09-71	571150	IBM CORP. GSD
		P.N. 5889272

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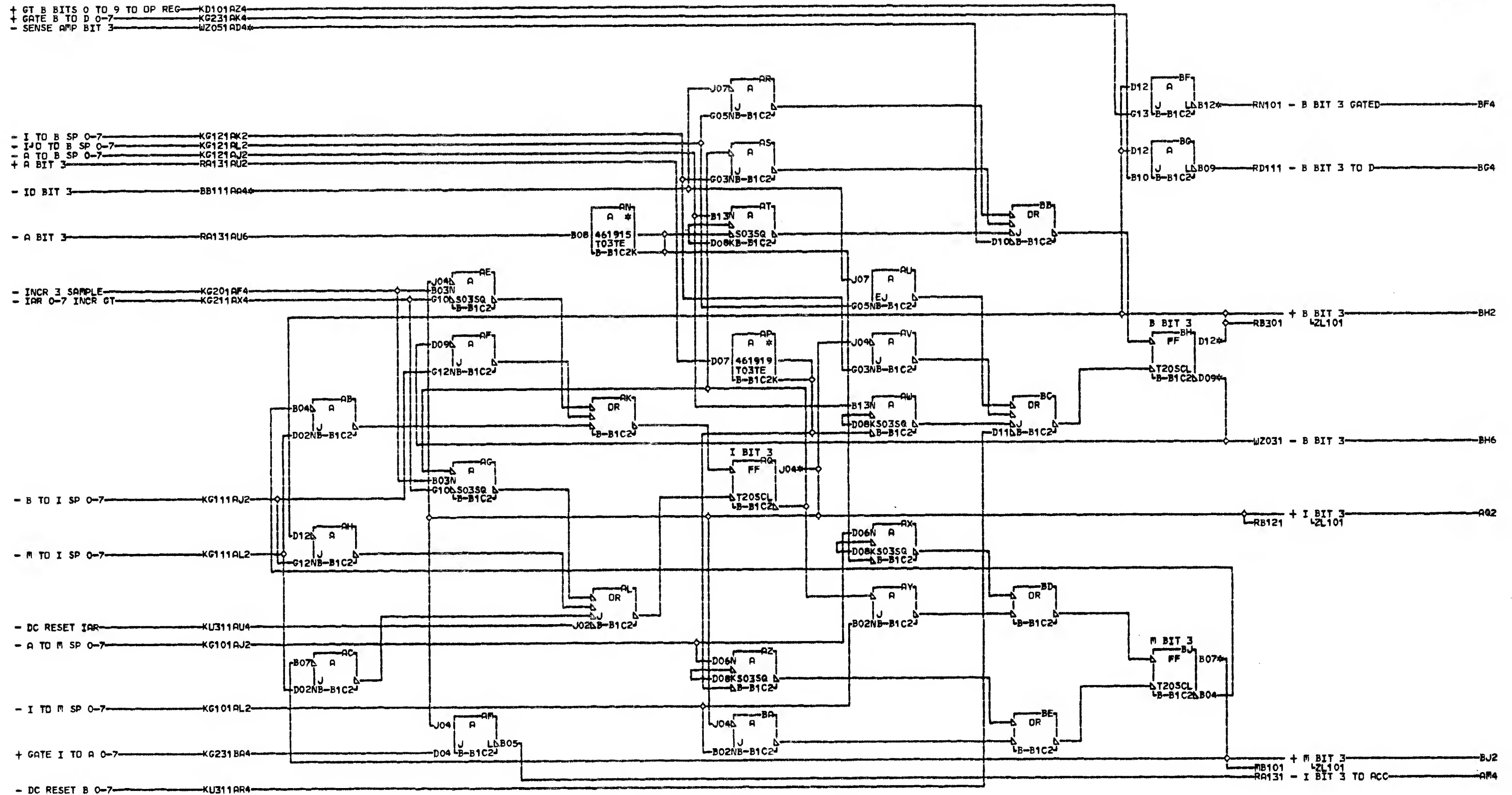

 LOC. TYPE  
 B-B1C2 4619

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		P.N. 5889273	

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 B-B1C2J09  
 WZ051AC4 RESISTOR  
 B-B1C2J10  
 AQ2 B-B1N2B02  
 BF4 B-B1A2B11  
 01B-A1N2B11  
 BH2 B-B1M3B03  
 RESISTOR  
 B-B1C2J12  
 BH6 B-B1B1C09  
 01B-C1B1C09  
 BJ2 B-B1M2B02

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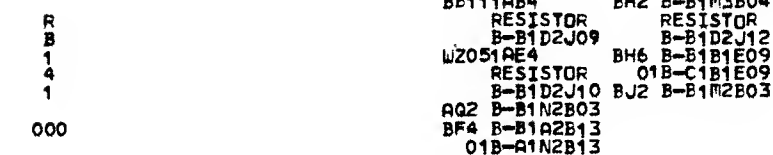
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 BF4 B-B1A2B12  
 O1B-A1N2B12

BH2 B-B1M3D04  
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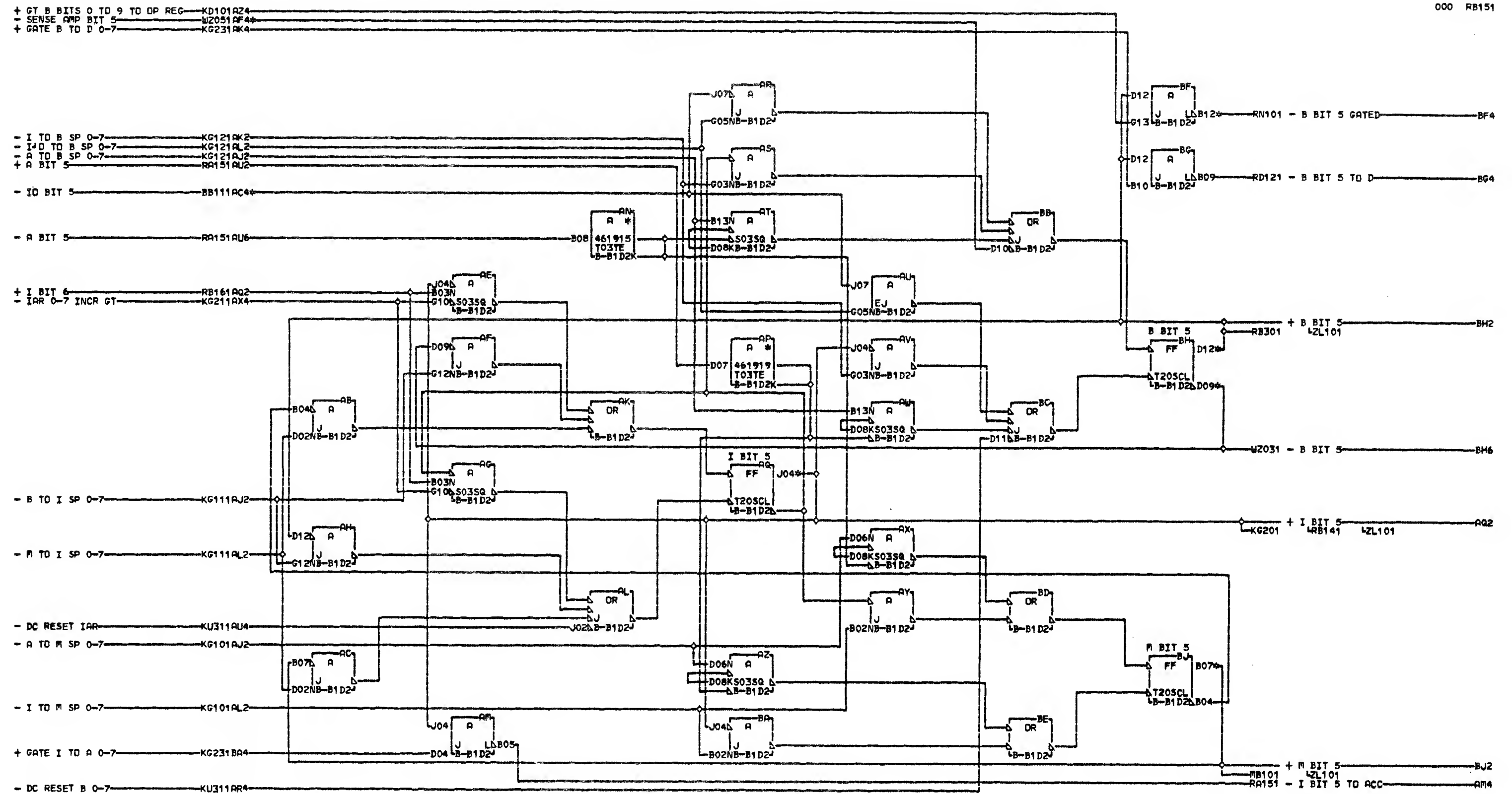
LOC. TYPE  
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FRAME	01
IBM CORP. GSD	P.N. 5889274

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I B AND M REGISTERS		R B 1 4 1  000
BIT 4		
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DATE LAST EC	FRAME 01	
02-09-71 571150	IBM CORP. GSD	
	P.N. 5889275	


 LOC. TYPE  
 B-B1D2 4619

I B AND M REGISTERS			
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02-09-71		571150	
FRAME		PACH.1131-C	
IBM CORP. GSD		P.N. 5889276	

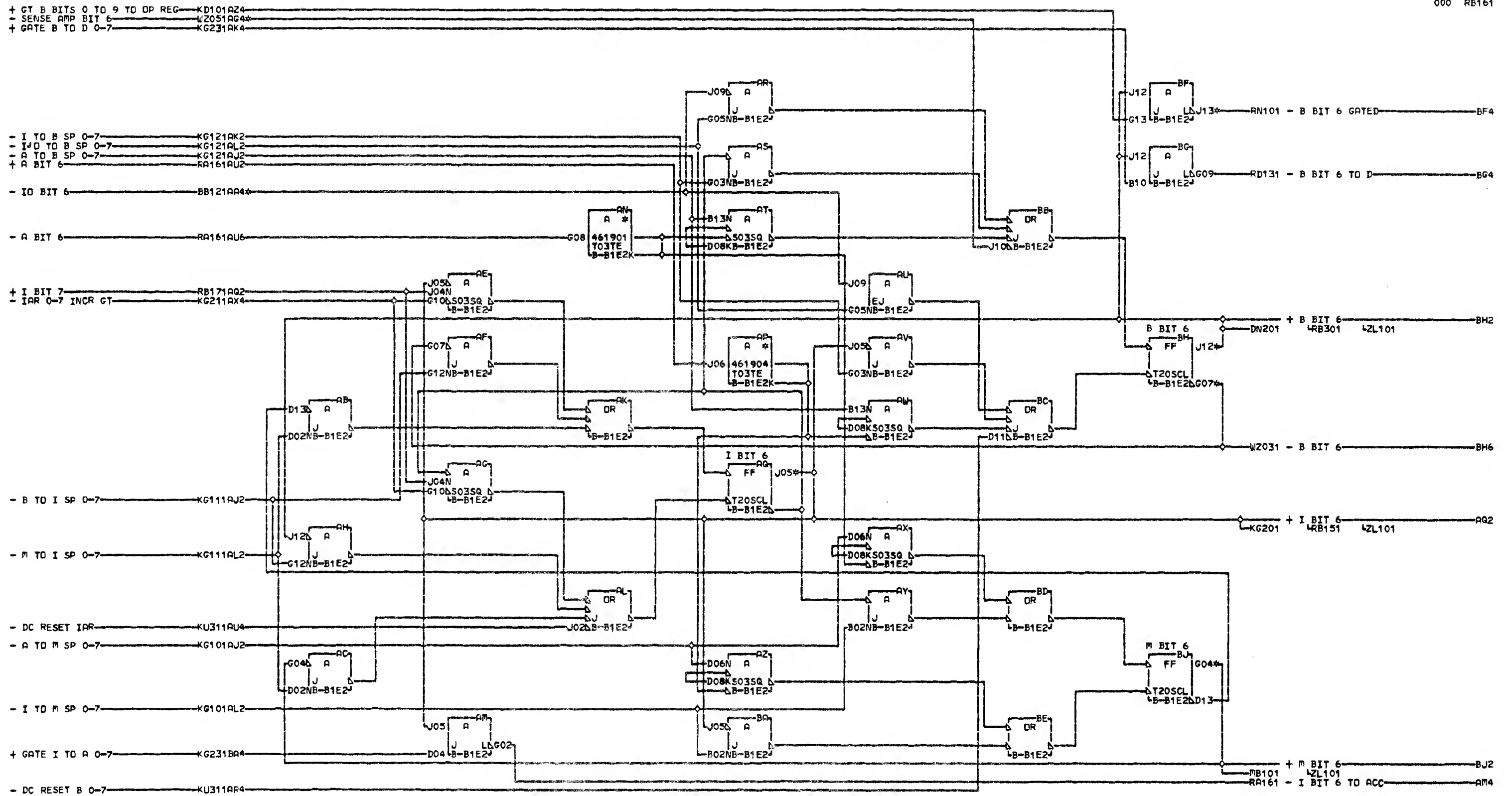
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 RESISTOR  
 B-B1D2D10  
 AQ2 B-B1N2D04  
 BF4 B-B1A2D09  
 01B-A1N2D09

 BH2 B-B1M3D05  
 RESISTOR  
 B-B1D2D12  
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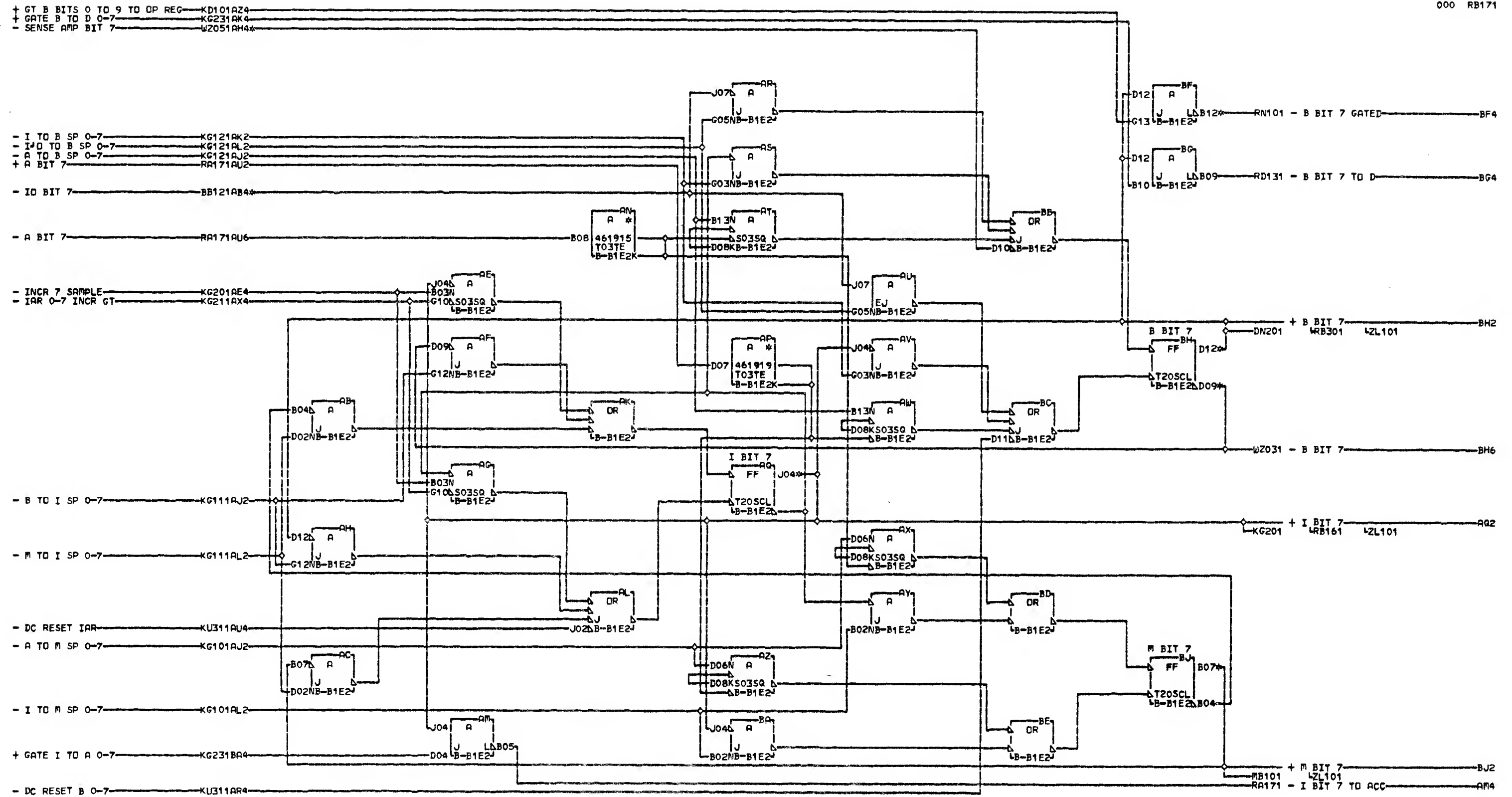
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 RESISTOR B-B1E2J12  
 B-B1E2J10 BH6 B-B1C1C09  
 AQ2 B-B1N2B04 01B-C1C1C09  
 BF4 B-B1A2D10 BJ2 B-B1M2B04  
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LDC TYPE  
 B-B1E2 4619

I B AND M REGISTERS	
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MACH.1131-C	
FRAME	01
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02-09-71	571150
P.N.	5889277

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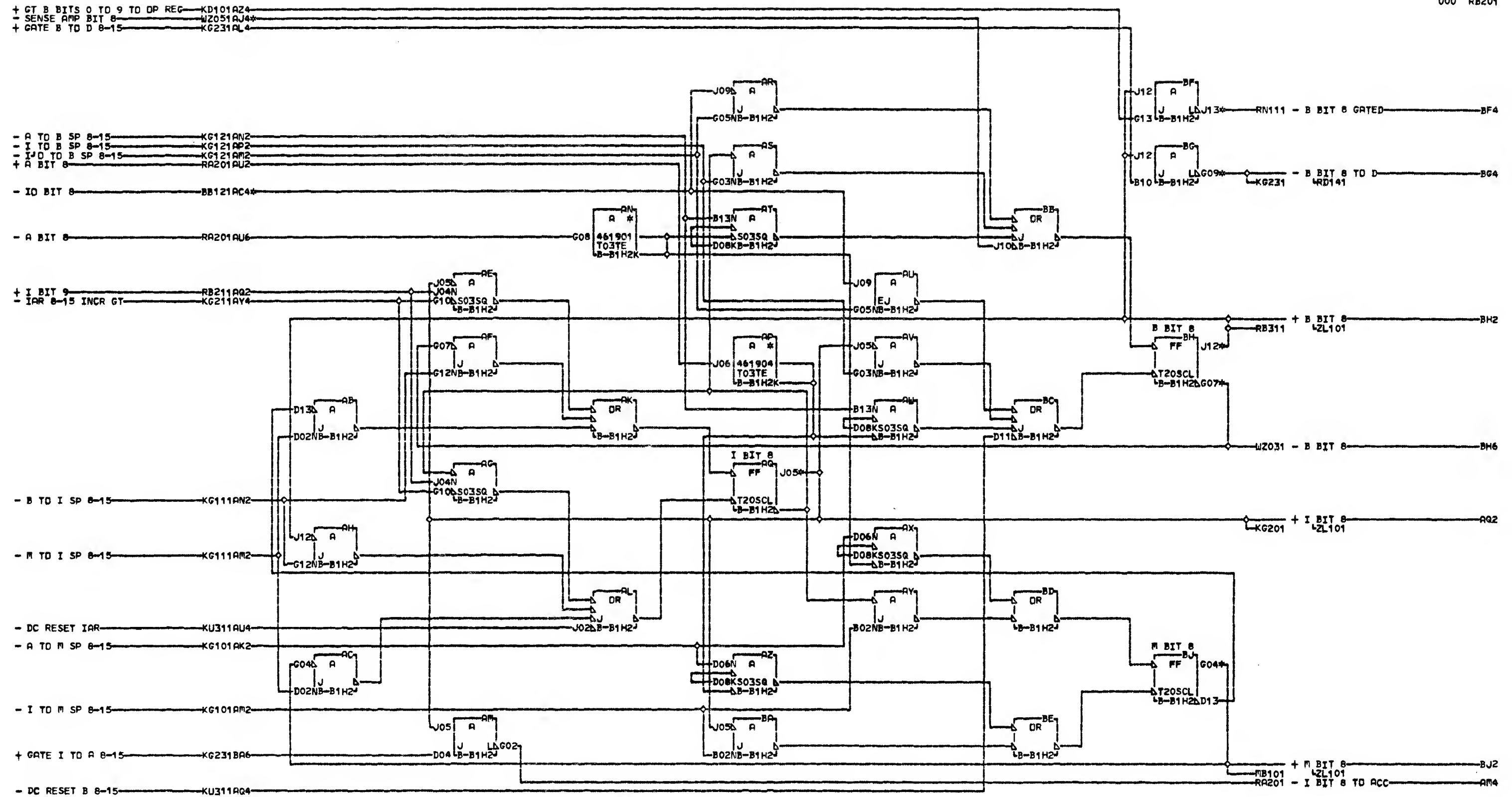
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 RESISTOR B-B1E2D12  
 B-B1E2D10 BH6 B-B1C1D09  
 AQ2 B-B1N2D05 01B-C1C1D09  
 BF4 B-B1A2D11 BJ2 B-B1M2D05  
 01B-A1N2D11

LOC. TYPE  
 B-B1E2 4619

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DATE	LAST EC
02-09-71	571150
FRAME	01
IBM CORP. GSD	
P.No. 5889278	

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 LOC. TYPE  
 B-B1H2 4619

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DATE		FRAME 01	
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02-09-71 571150		P.N. 5889279	

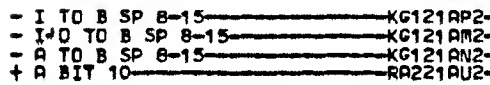
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 WZ051AJ4 RESISTOR  
 RESISTOR B-B1H2J12  
 B-B1H2J10 BH6 B-B1C1E09  
 AQ2 B-B1N2B05 01B-C1C1E09  
 BF4 B-B1E1A11 BJ2 B-B1M2B05  
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REB-1



~~- IO BIT 10-----BB131AB4x~~

~~- A BIT 10-RA221 AU6-~~

~~+ I BIT 11 RB231AQ2-~~  
~~- IAR 8-15 INCR GT KG211AY4-~~

~~7 1 511 11 RB231 AQ2~~  
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~~- B T O I SP 8-15-----KG111AN2-~~

~~- M T O I SP 8-15-----KG111AM2-~~

~~- DC RESET IAR-----KU311AU4-~~

- A T O M S P 8-15-----KG101AK2-

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+ GATE I TO A 8-15-----KG231 BA6-

~~DC RESET B 8-15~~ ~~KU311AQ4~~

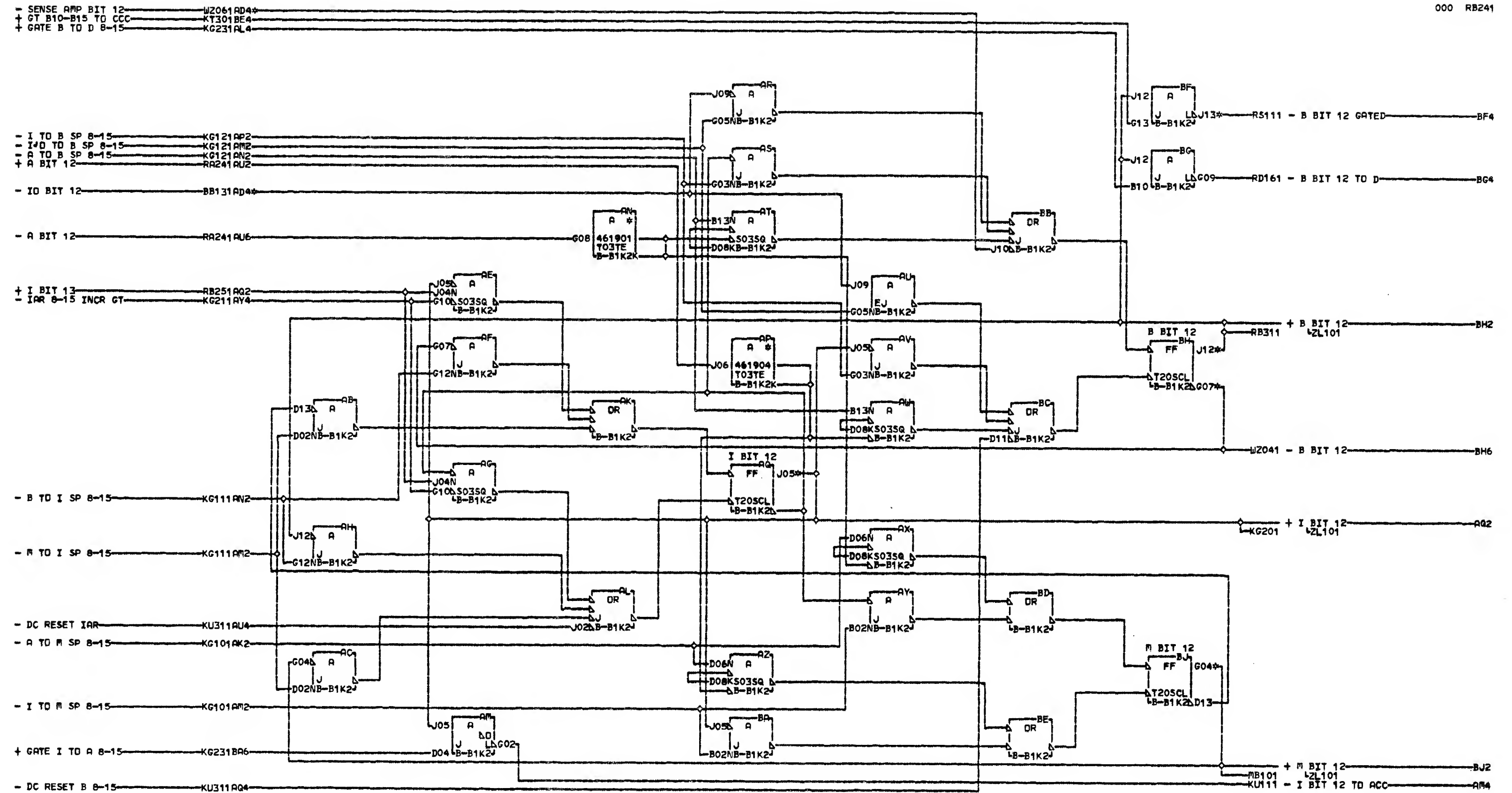
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02-09-71 571150
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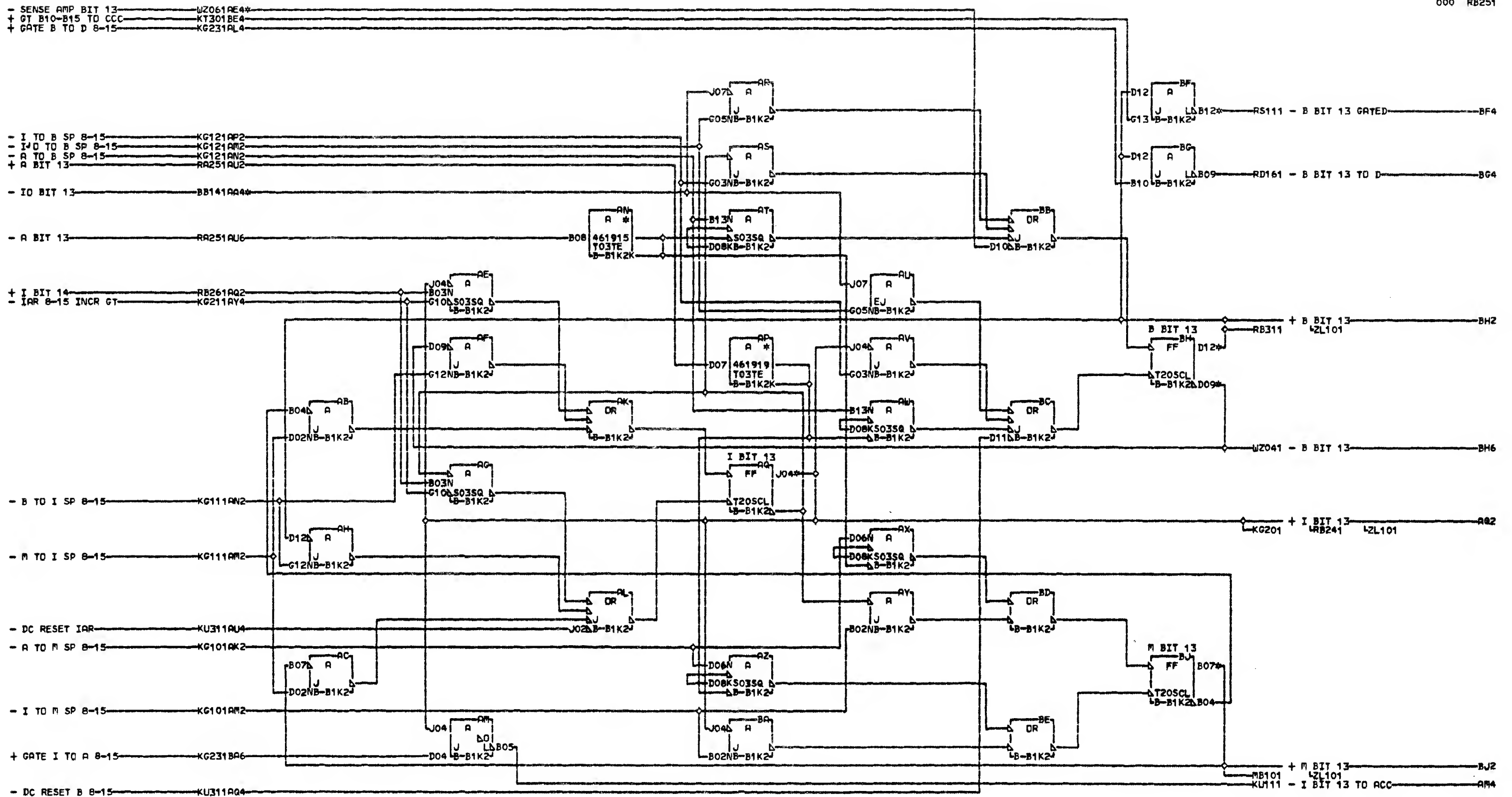


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 RESISTOR 01B-C1L1C09  
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LOC. TYPE  
 B-B1K2 4619

I B AND M REGISTERS	
BIT 12	
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DATE	LAST EC
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IBM CORP. GSD	
P.N. 5889283	

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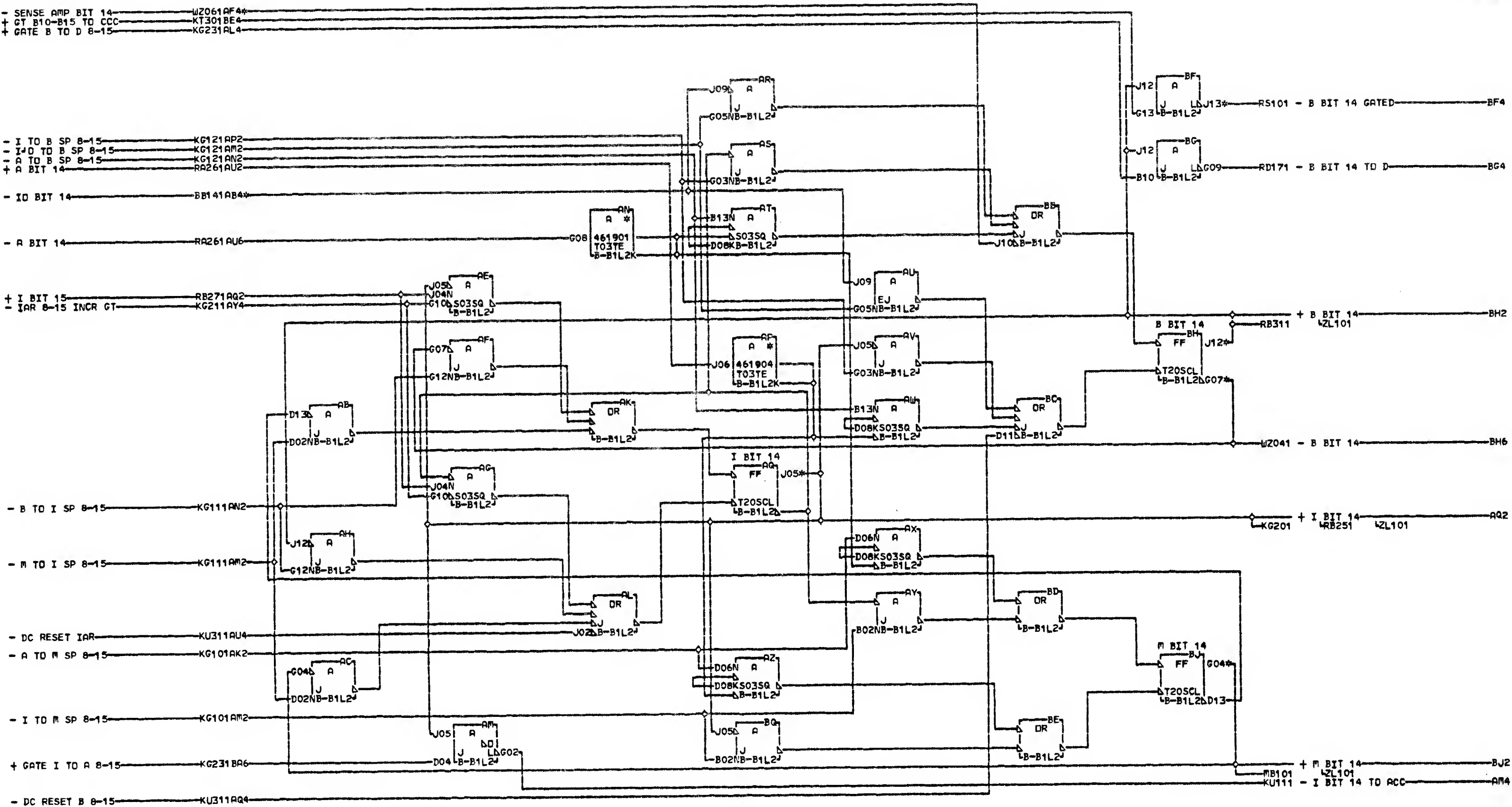


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BH2 B-B1M3D10  
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LDC TYPE  
 B-B1K2 4619

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LAST EC	IBM CORP. GSD	
02-09-71	571150	P.N. 5889284



LOC. TYPE  
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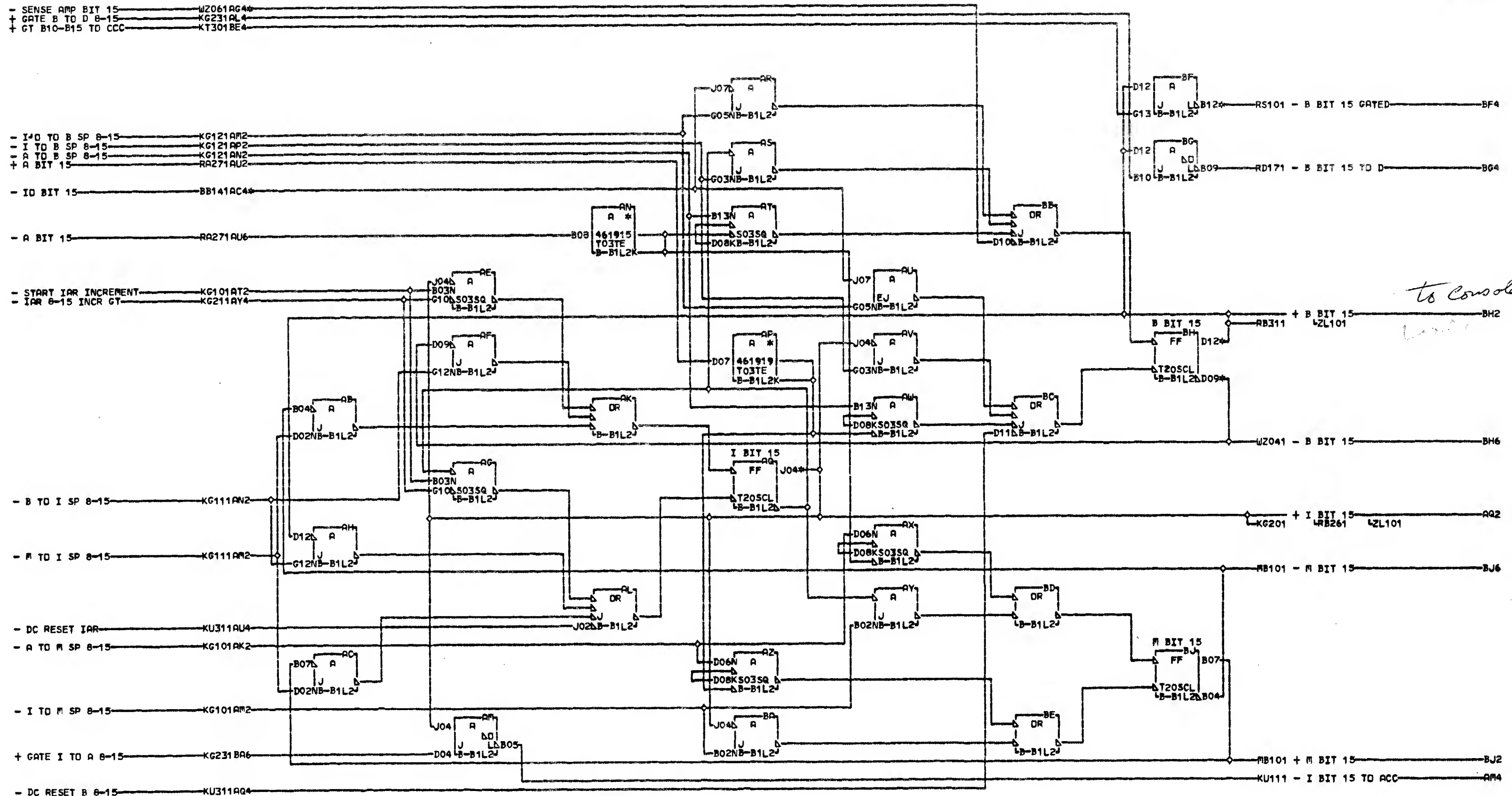
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B-B1L2J10 BJ2 B-B1M2B09  
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R B 2 6 1  
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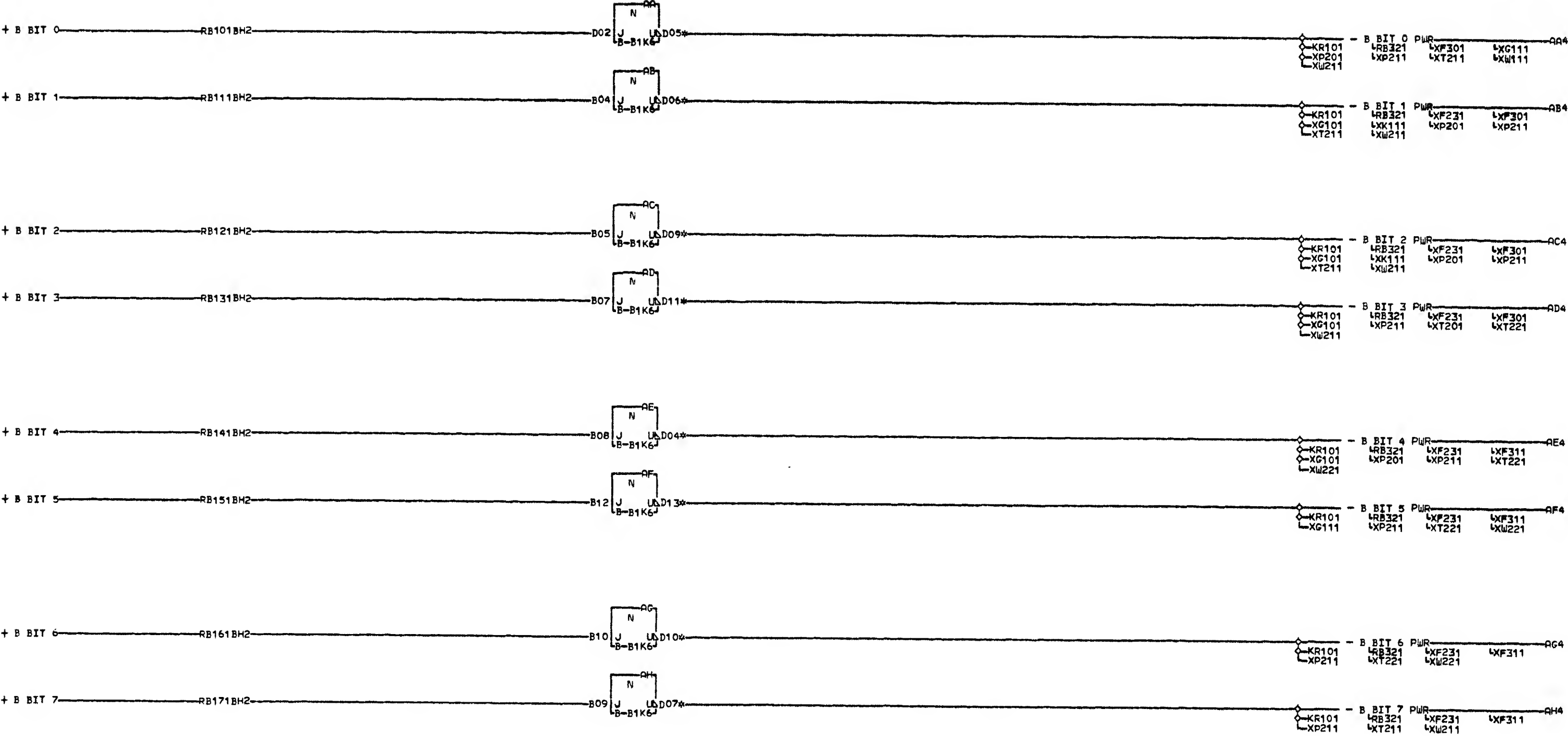
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LOC. TYPE  
 B-B1L2 4619

I B AND M REGISTERS	
BIT 15	
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DATE	LAST EC
02-09-71	571150
FRAME	01
IBM CORP. GSD	
P.No. 5889286	

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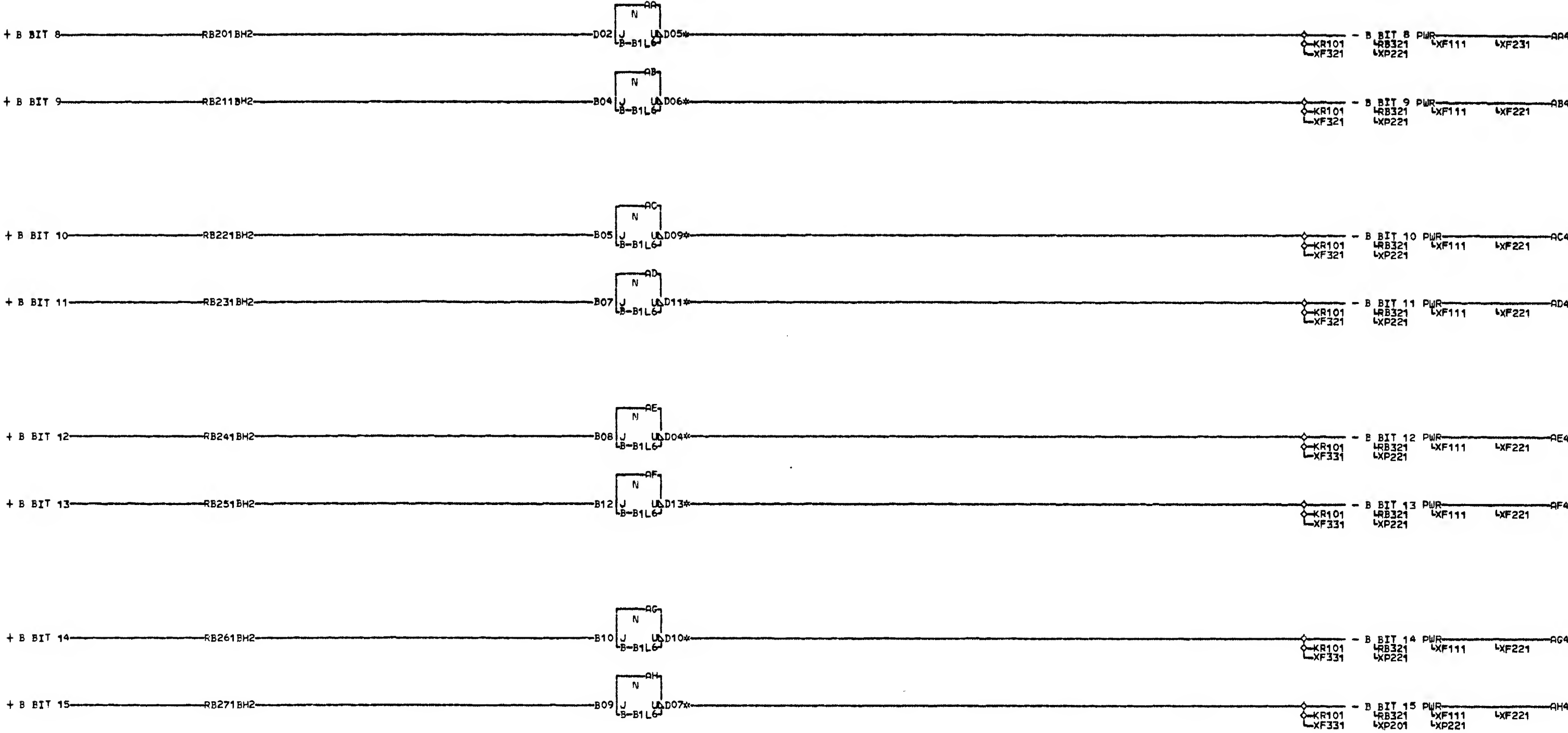
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SIM TO PN 5889287 EC 571150

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01A-C1A6B03	01A-B1N6B04	01A-C1B6D05	01A-C1B6D06
01A-B1N6B03	AD4 B-B1N6D04	01A-C1B6D05	01A-C1A6D05
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01A-C1B6D02	01A-C1A6D03	01A-B1N6D04	
01A-C1A6D02	01A-B1N6D03	AG4 B-B1N6B05	
01A-B1N6D02	RE4 B-B1N6B04	01A-C1B6B05	
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LOC. TYPE  
B-B1K6 3024

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DATE	LAST EC
03-14-72	571155
P.N.	5889470

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SIM TO PN 5889288 EC 571150

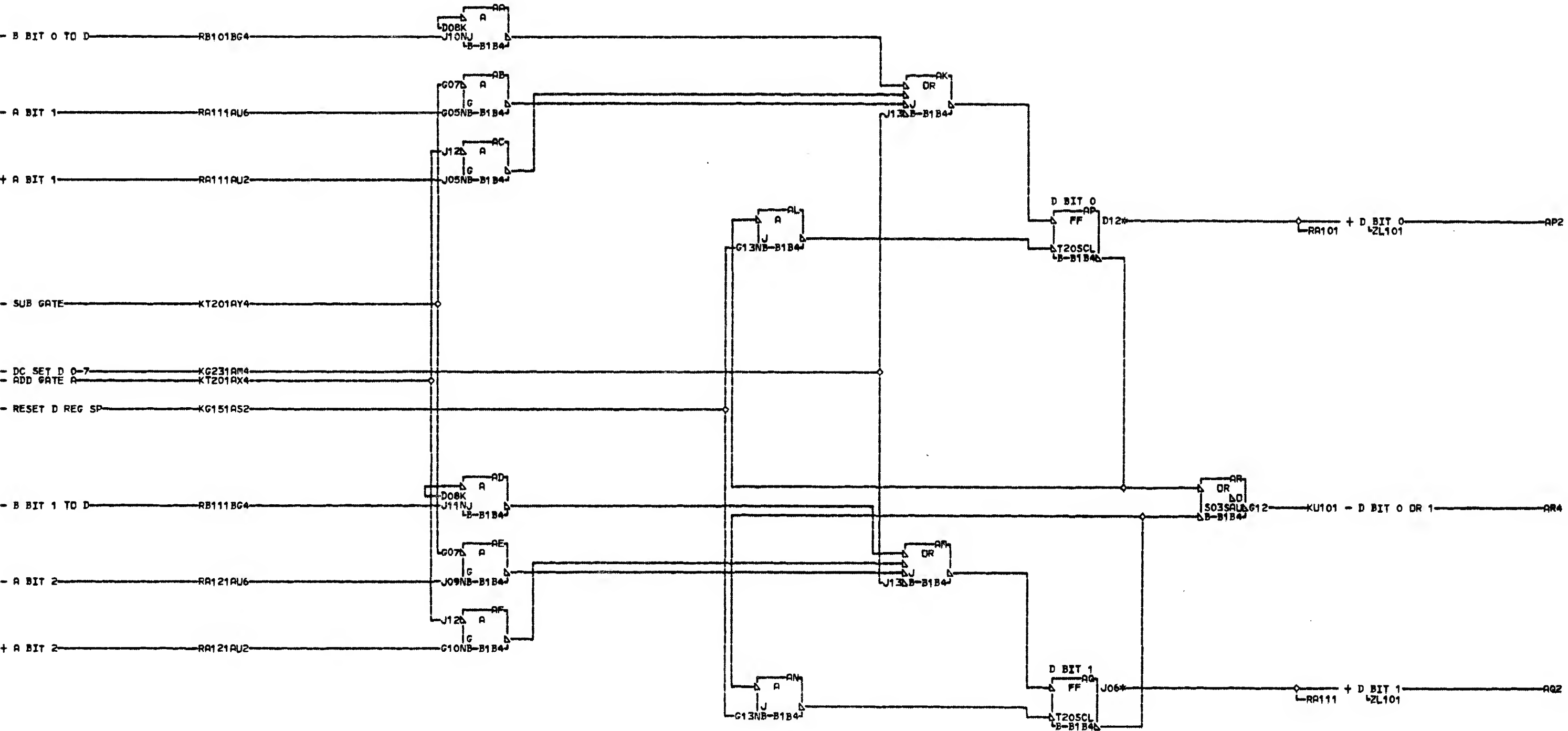
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01A-C1A6B07	01A-B1N6B08	AF4 B-B1N6D10	01A-C1B6D11
01A-B1N6B07	AD4 B-B1N6D09	01A-C1B6D10	01A-C1A6D10
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01A-C1A6D06	01A-B1N6D07	AG4 B-B1N6B10	
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LCC. TYPE  
B-B1L6 3024

B REGISTER POWERING BITS 8-15	
E.C.-HISTORY	MACH.1131-C
	FRAME 01
	IBM CORP. GSD
DATE LAST EC	P.N. 5889471
03-14-72 571155	

R  
B  
3  
1  
1

-B POWER TERMINATORS	
-E.C.-HISTORY	MACB.1131-C
	FRAME 01
	IBM CORP. GSD
DATE LAST EC	P.N. 5869289
02-09-71 571150	



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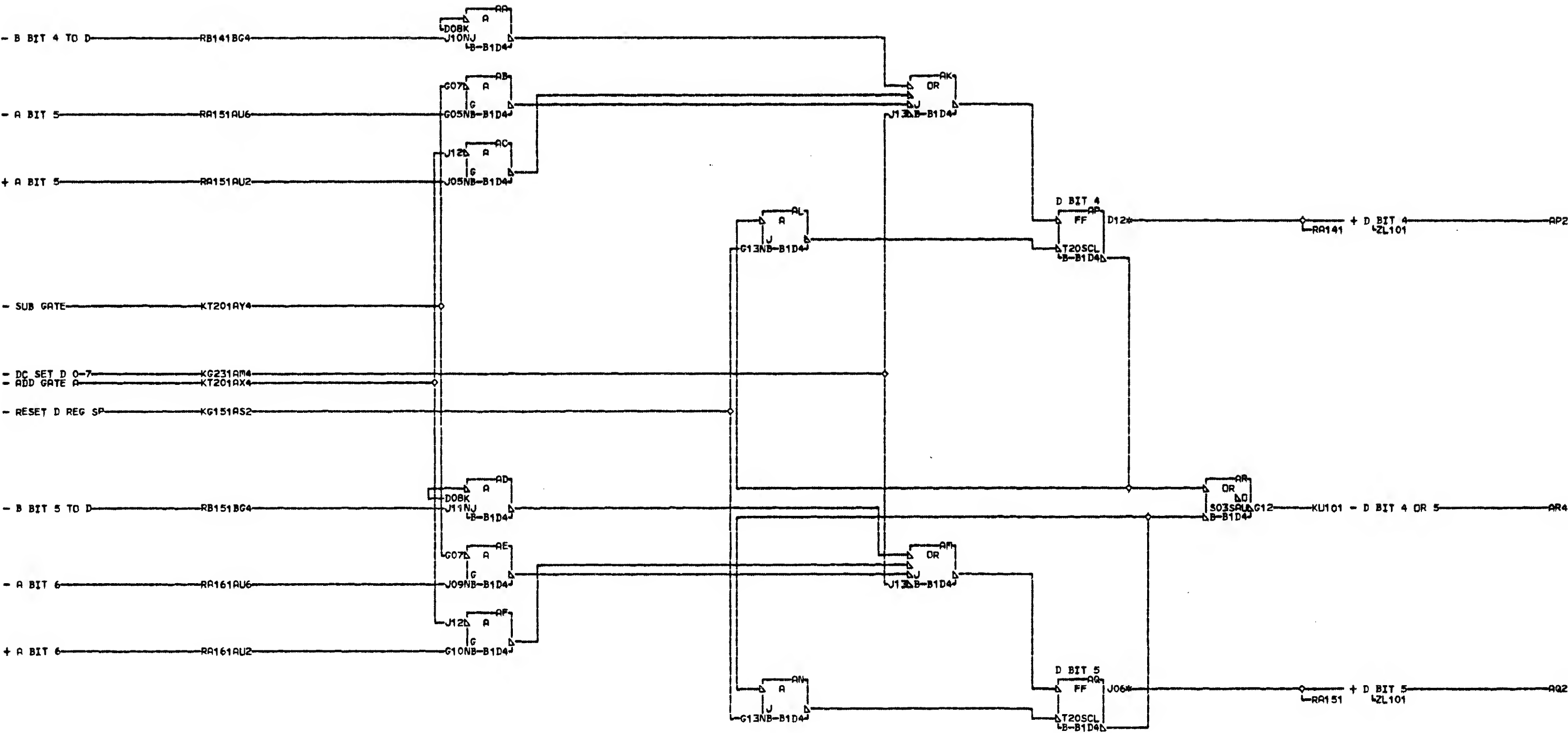
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FRAME	01
IBM CORP. GPD	
P.N.	5889290

RD101  
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D REGISTER		RD 1 1 1 000
BITS 2 AND 3		
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	IBM CORP. GPD	
	P.N. 5889291	



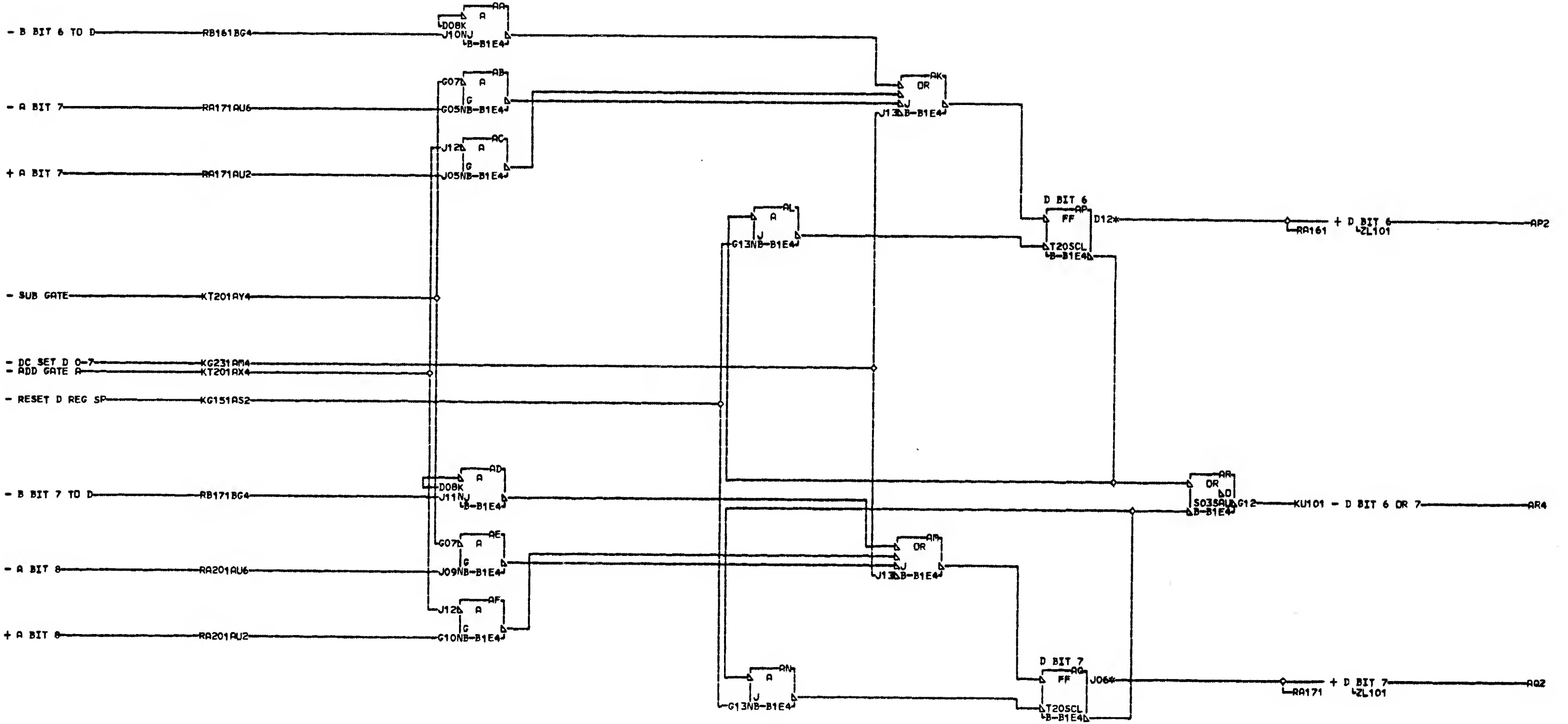
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AQ2 B-B1N4D05

LOC. TYPE  
B-B1D4 6255

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P.N. 5889292	

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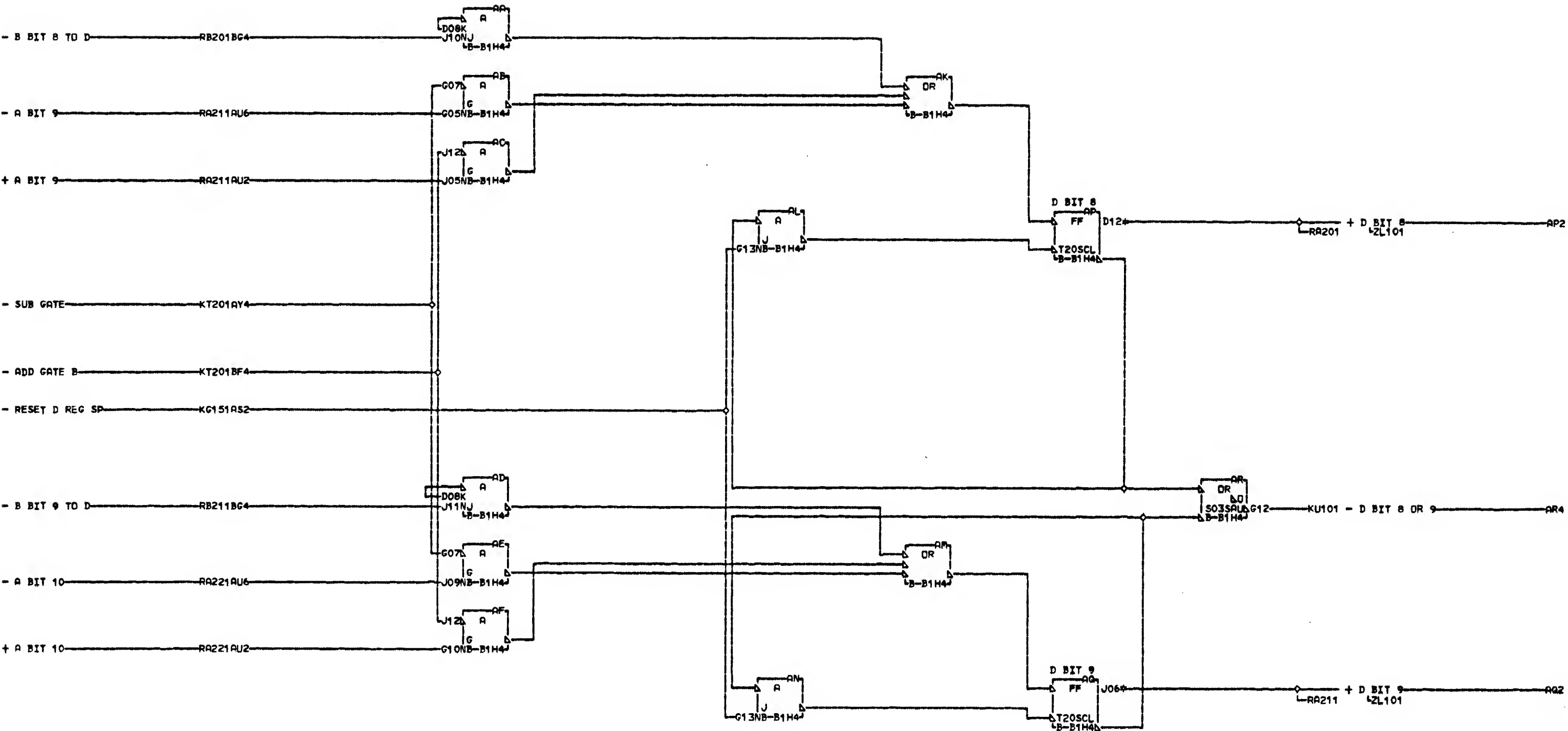
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RD131  
000



RD141  
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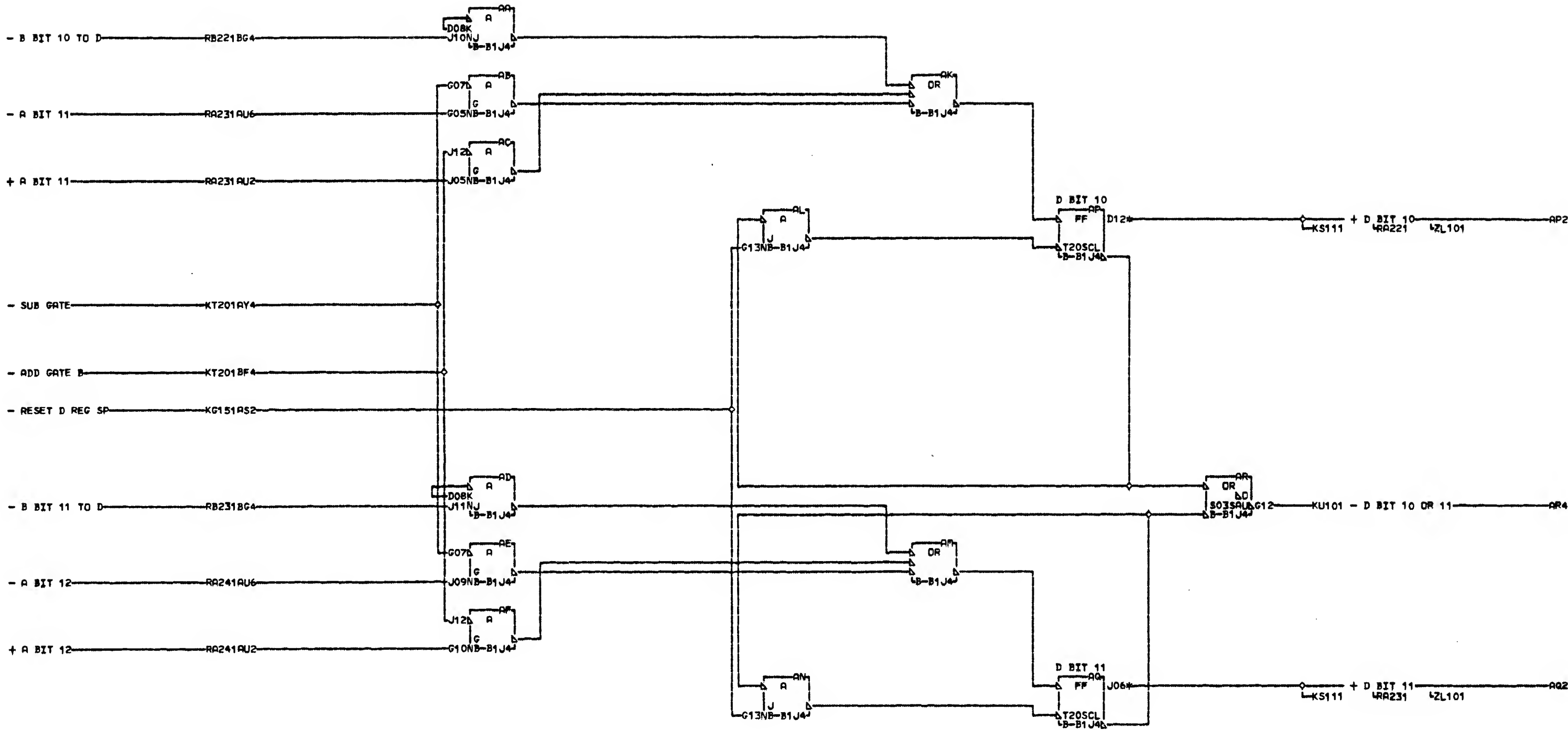
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DATE LAST EC	FRAME 01
02-09-71 571150	IBM CORP. GPD
	P.N. 5889294

RD141  
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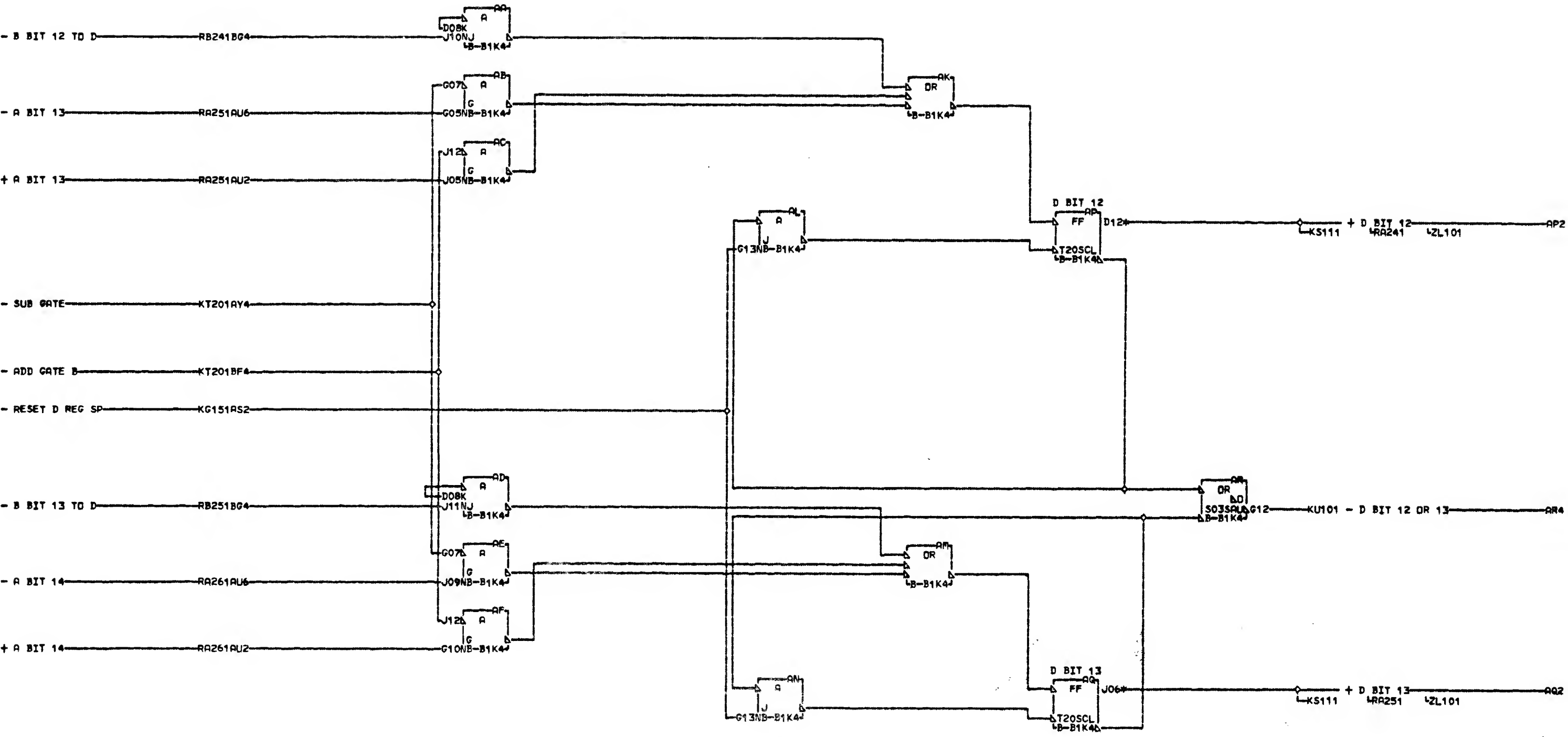
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AQ2 B-B1N4D09  
01B-B1A5D03  
01B-A1N5D03

LDC. TYPE  
B-B1J4 6255

D REGISTER	
BITS 10 AND 11	
-E-C-HISTORY-	MACH.1131-C
DATE	LAST EC
02-09-71	571150
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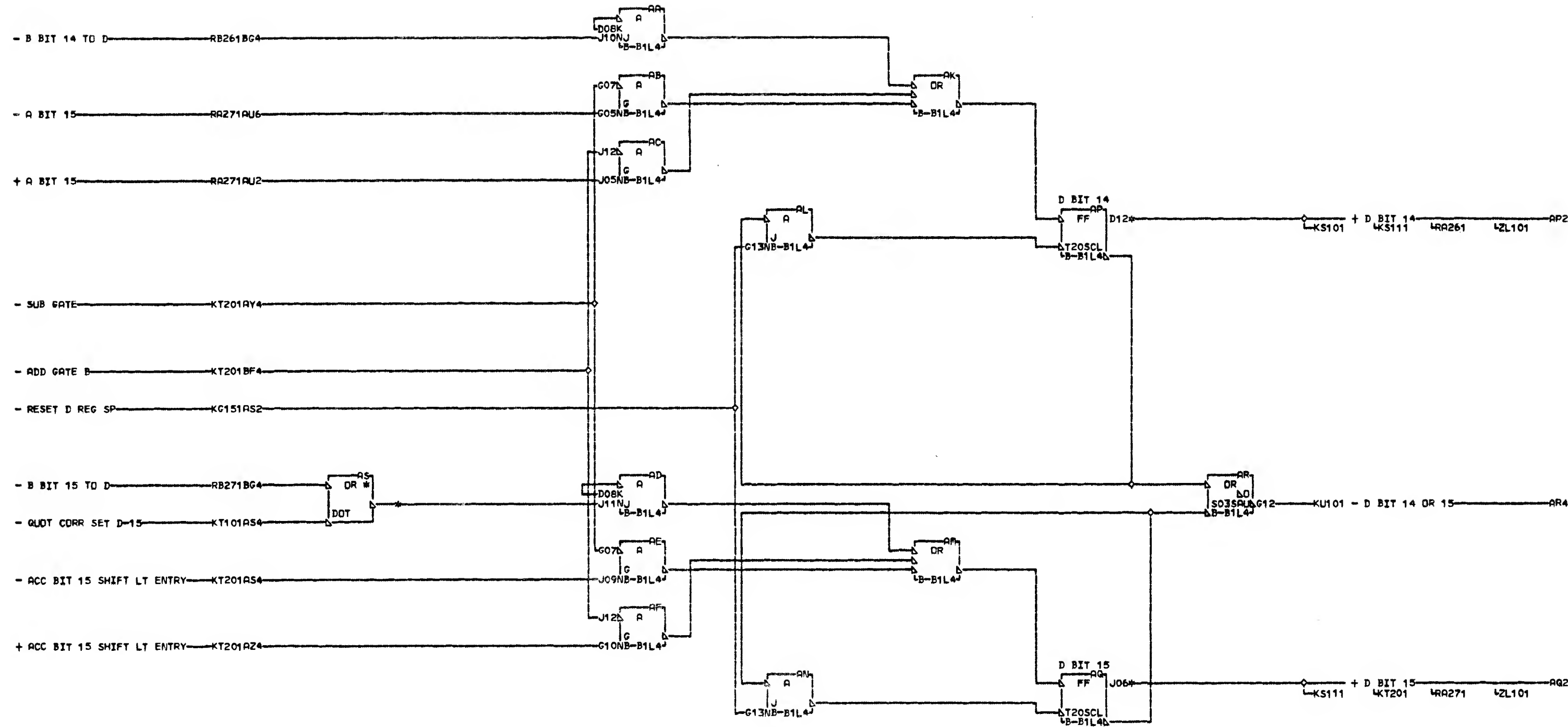
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AQ2 B-B1N4D10  
01B-B1A5D04  
01B-A1N5D04

LOC. TYPE  
B-B1K4 6255

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DATE LAST EC 02-09-71 571150	IBM CORP. GPD P.No. 5889296

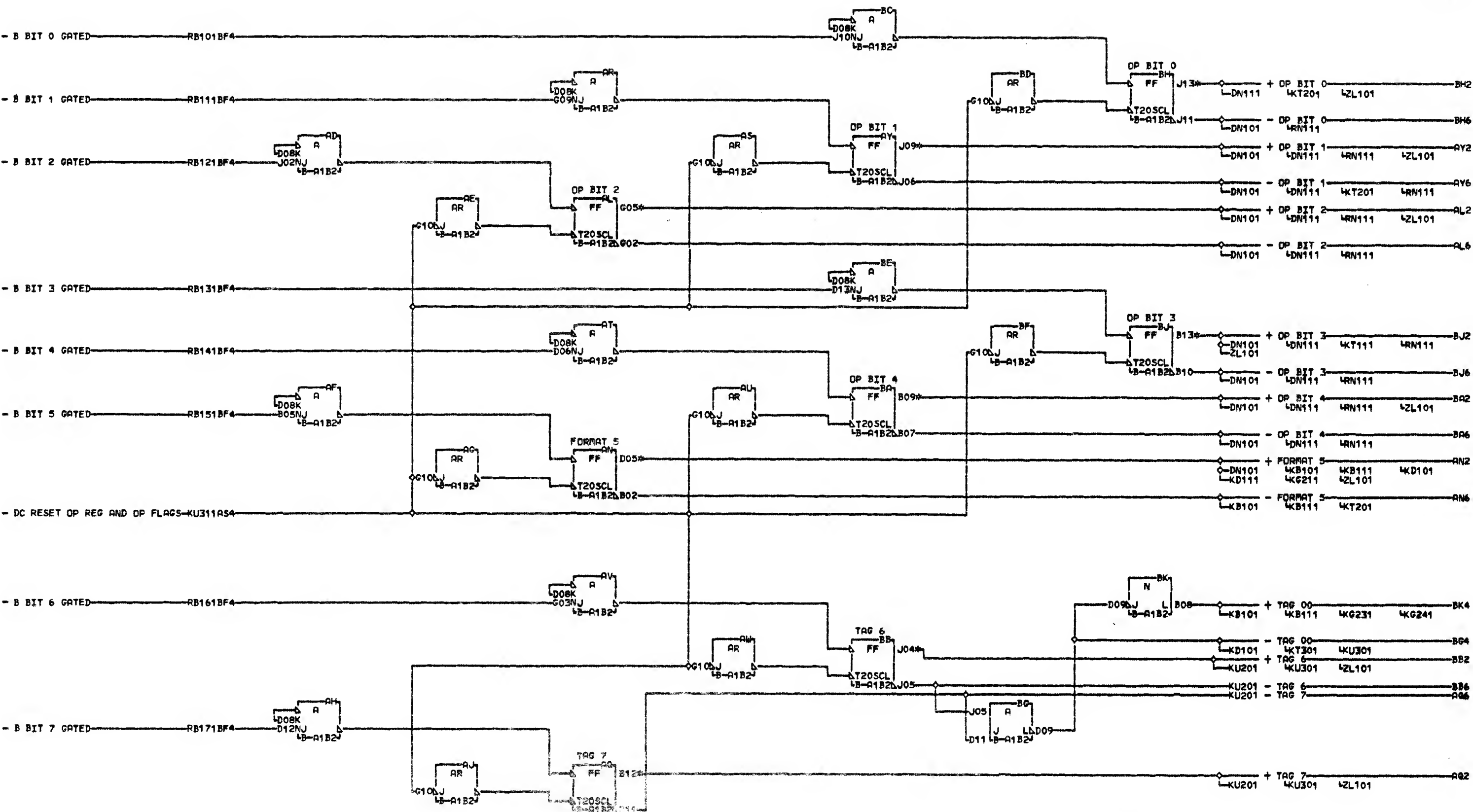
RD161



LOC. TYPE  
B-B1L4 6255

D REGISTER BITS 14 AND 15	
E.C.-HISTORY	MACH. 1131-C
DATE	LAST EC
02-09-71	571150
FRAME	01
IBM CORP. GPD	
P.N. 5889297	

R  
D  
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7  
1  
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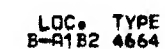


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AN2 B-A1A2D02  
AO2 B-A1A2D05  
AY2 B-A1A2B03  
BA2 B-A1A2B07  
BB2 B-A1A2D04  
BH2 B-A1A2B02  
BJ2 B-A1A2B05

LOC. TYPE  
B-A1B2 4664

OP-FORMAT-TAG REGISTER	
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DATE	LAST EC
02-09-71	571150
FRAME	01
IBM CORP. GSD	P.N. 5889298

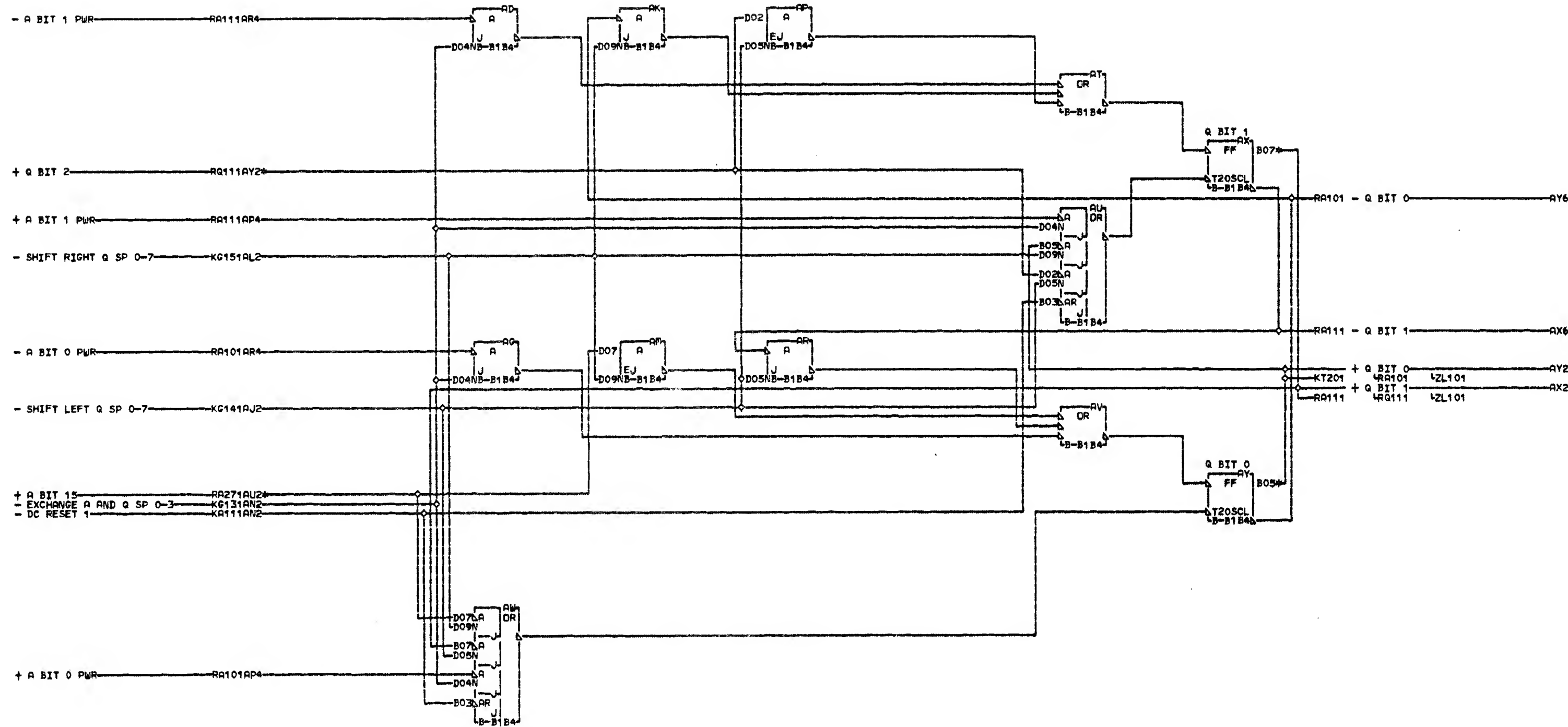
R  
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0  
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000



```

MOD 8 MOD 9 WAIT OP
DBL WORD ODD ADDR
-E.C.-HISTORY-      MACH#1131-C
                     FRAME      01
                     IBM CORP. GPD
DATE      LAST EC   P.N# 5889299
02-09-71  571150

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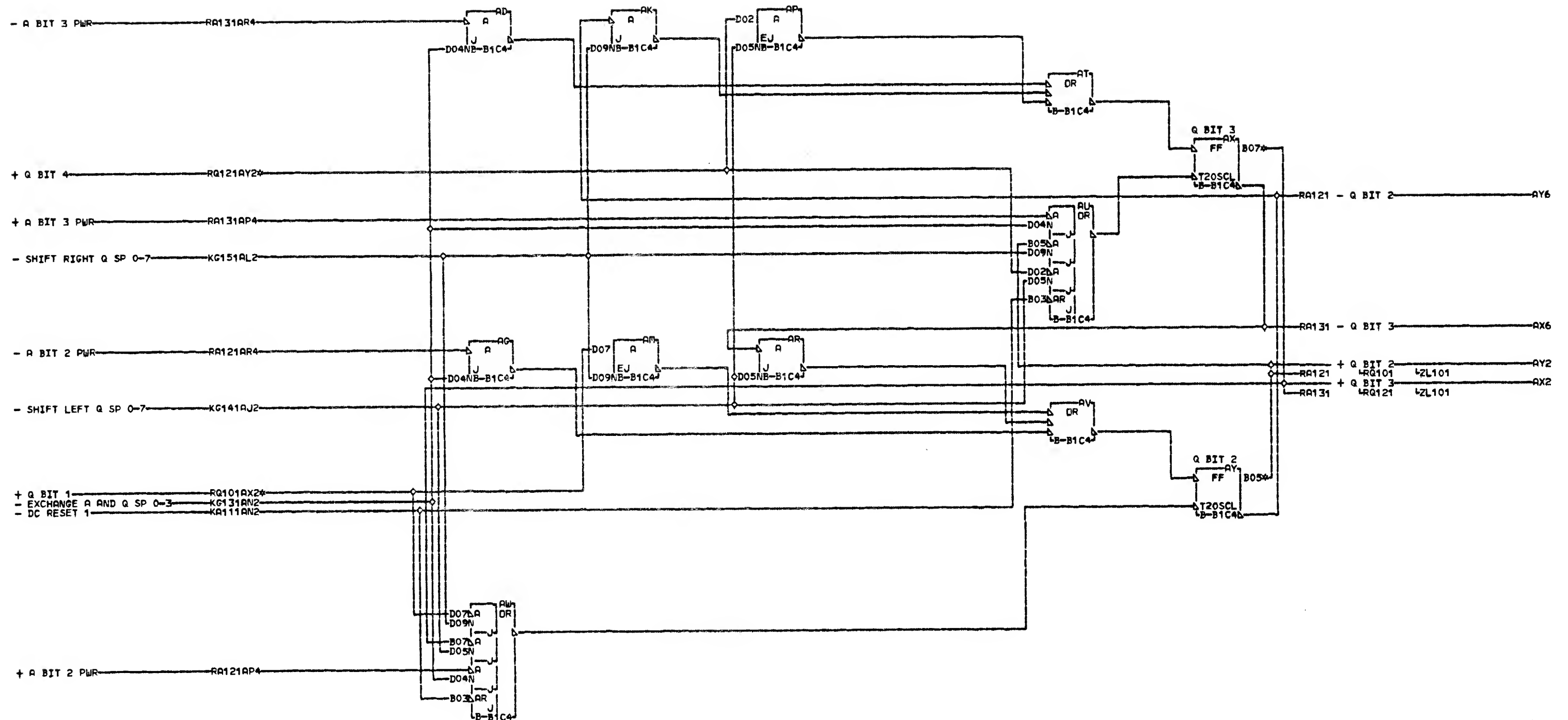
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101011

RA271AU2 01B-A1N5B08  
RESISTOR  
B-B1B4D07  
RQ111AY2  
RESISTOR  
B-B1B4D02  
AX2 B-B1N3D02  
AY2 B-B1N3B02  
01B-B1A5B08

LOC. TYPE  
B-B1B4 6255

Q REGISTER BITS 0 AND 1	
-E-C-HISTORY	MACH-1131-C
DATE	LAST EC
02-09-71	571150
FRAME	01
IBM CORP. GPD	
P.N. 5889300	

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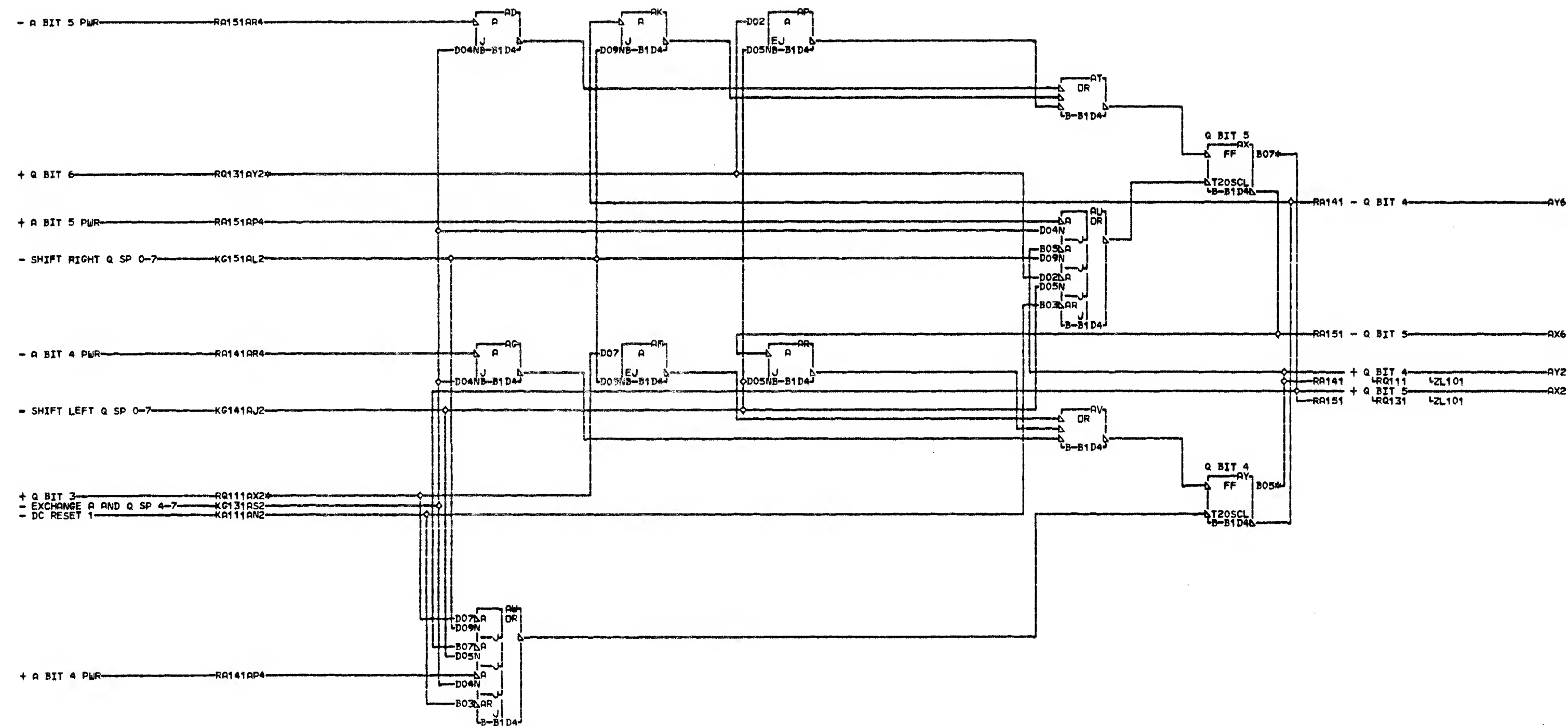


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111  
R

RQ101AX2  
RESISTOR  
B-B1C4D07  
RQ121AY2  
RESISTOR  
B-B1C4D02  
AX2 B-B1N3D04  
AY2 B-B1N3B03

LOC. TYPE  
B-B1C4 6255

Q REGISTER BITS 2 AND 3		R Q 1 1 1
E.C.-HISTORY		
MACH. 1131-C		
FRAME 01		
IBM CORP. GPD		
DATE	LAST EC	
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P.N. 5889301		000

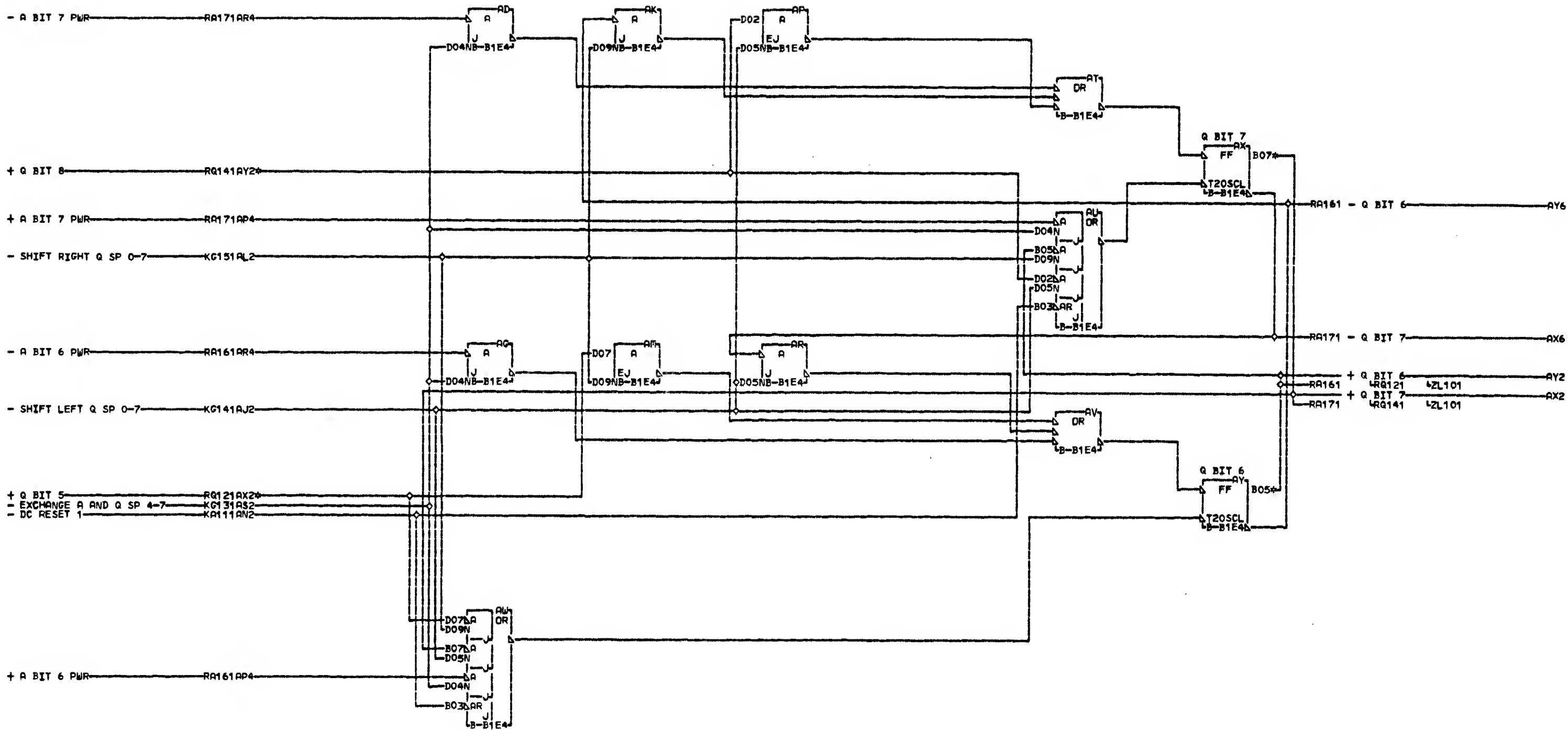


RQ111AX2  
RESISTOR  
B-B1D4D07  
RQ131AY2  
RESISTOR  
B-B1D4D02  
AX2 B-B1N3D05  
AY2 B-B1N3B04

LOC. TYPE  
B-B1D4 6255

Q REGISTER BITS 4 AND 5		R Q 1 2 1
E.C. HISTORY	MACH. 1131-C	
DATE	LAST EC	000
02-09-71	571150	
FRAME	01	
IBM CORP. GPD		
P.N. 5889302		





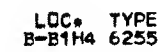
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Q  
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3  
1  
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RESISTOR  
B-B1E4D07  
RQ141AY2  
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B-B1E4D02  
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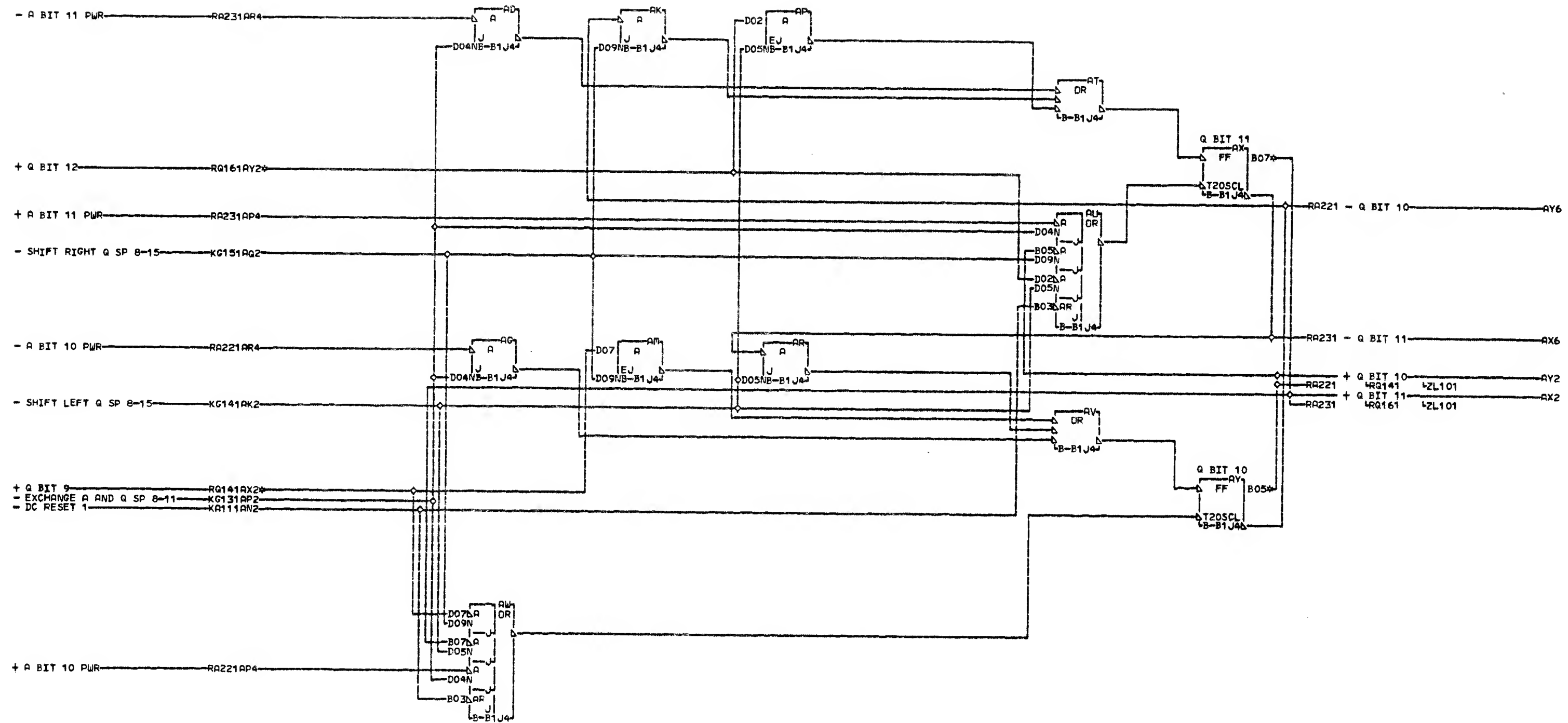
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-E.C.-HISTORY-	MACH.1131-C
DATE	LAST EC
02-09-71	571150
FRAME	01
IBM CORP. GPD	
P.N. 5889303	

R  
Q  
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3  
1  
000



000  
RQ141



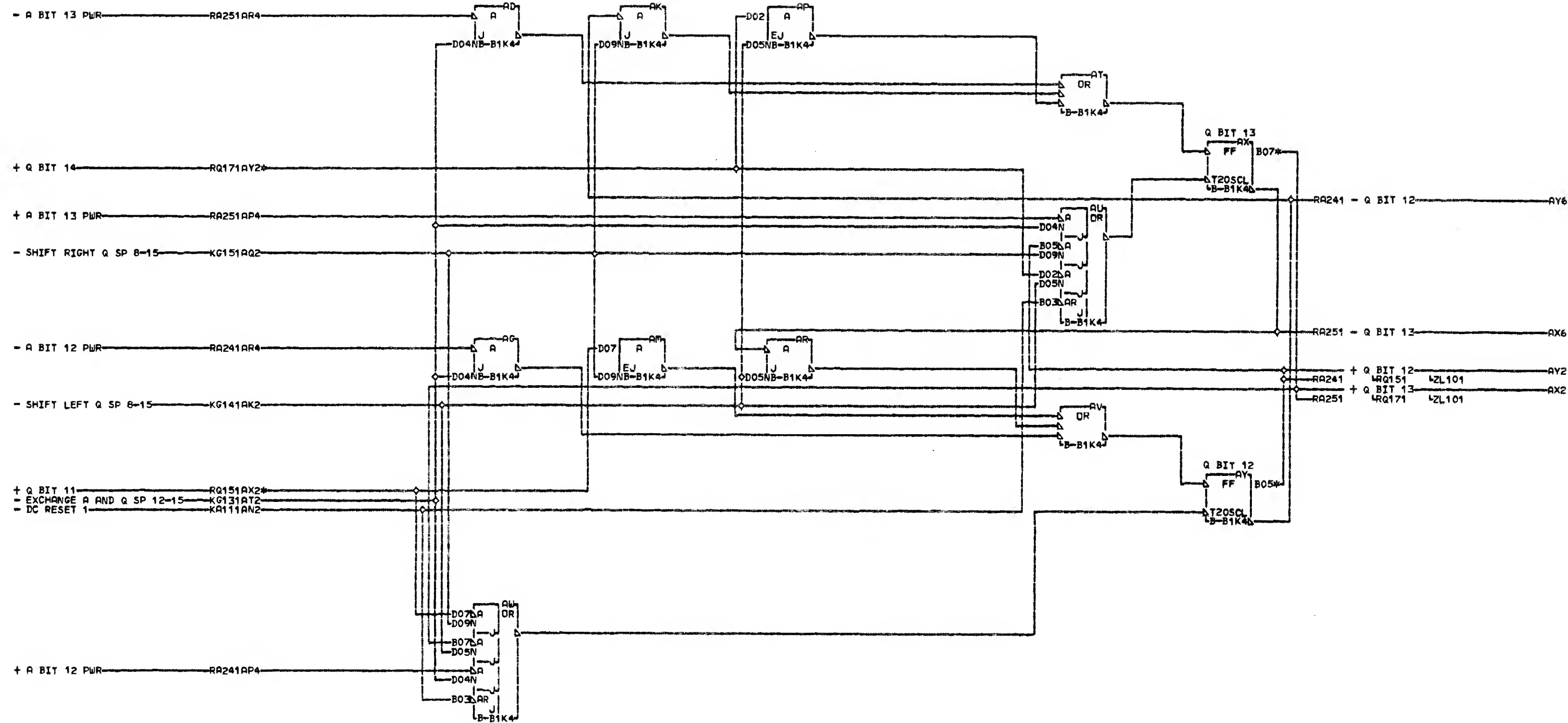
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RESISTOR  
B-B1J4D07  
RQ161AY2  
RESISTOR  
B-B1J4D02  
AX2 B-B1N3D09  
AY2 B-B1N3B08

LOC. TYPE  
B-B1J4 6255

Q REGISTER	
BITS 10 AND 11	
E.C.-HISTORY	MACH.1131-C
DATE	LAST EC
02-09-71	571150
FRAME	01
IBM CORP. GPD	
P.N. 5889305	

RQ151  
000

RQ151  
000



RQ151AX2  
RESISTOR  
B-B1K4D07  
RQ171AY2  
RESISTOR  
B-B1K4D02  
AX2 B-B1N3D10  
AY2 B-B1N3B09

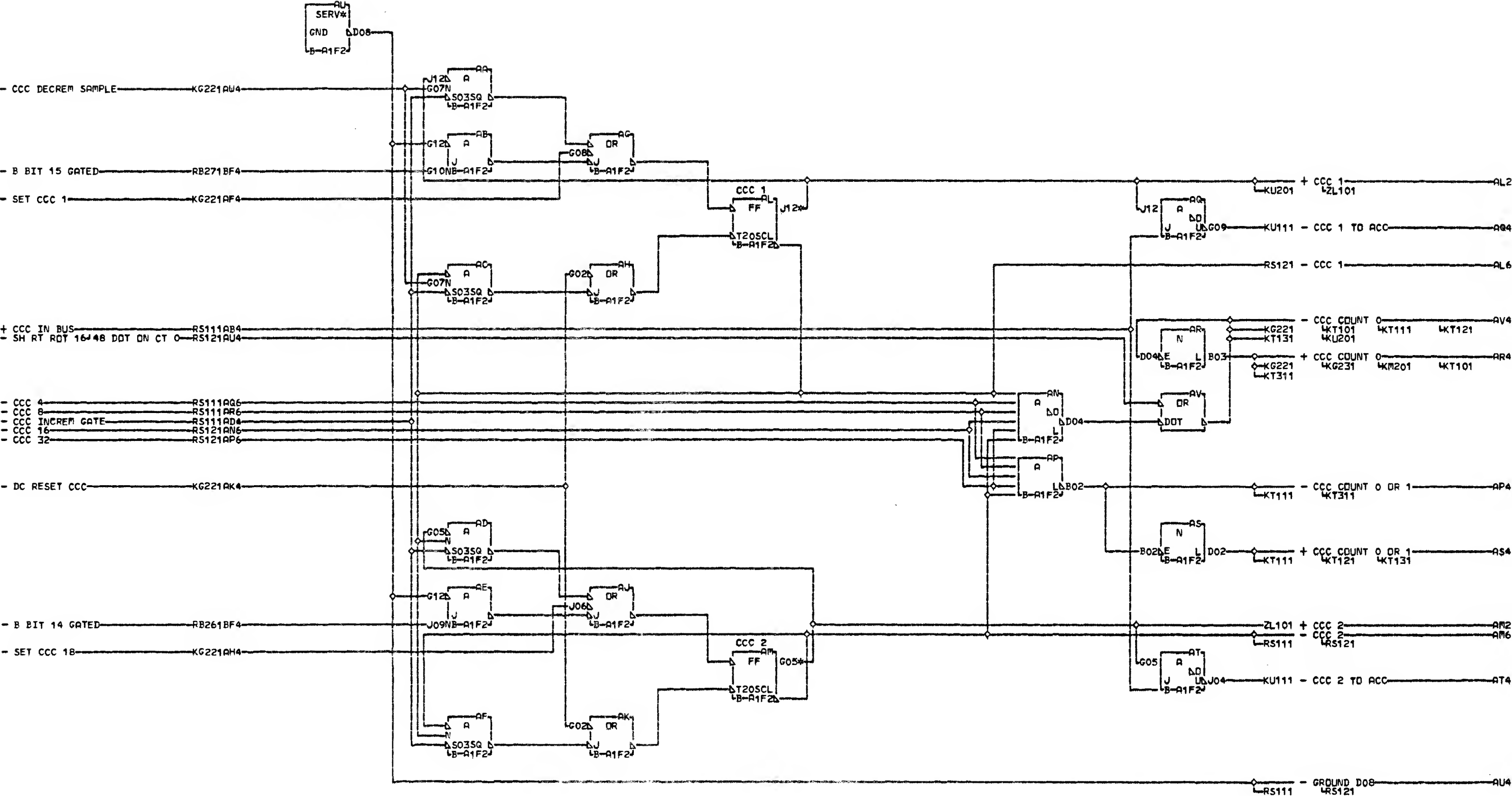
LOC. TYPE  
B-B1K4 6255

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DATE	LAST EC
02-09-71	571150
FRAME	01
IBM CORP. GPD	P.N. 5889306

RQ161

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RS101

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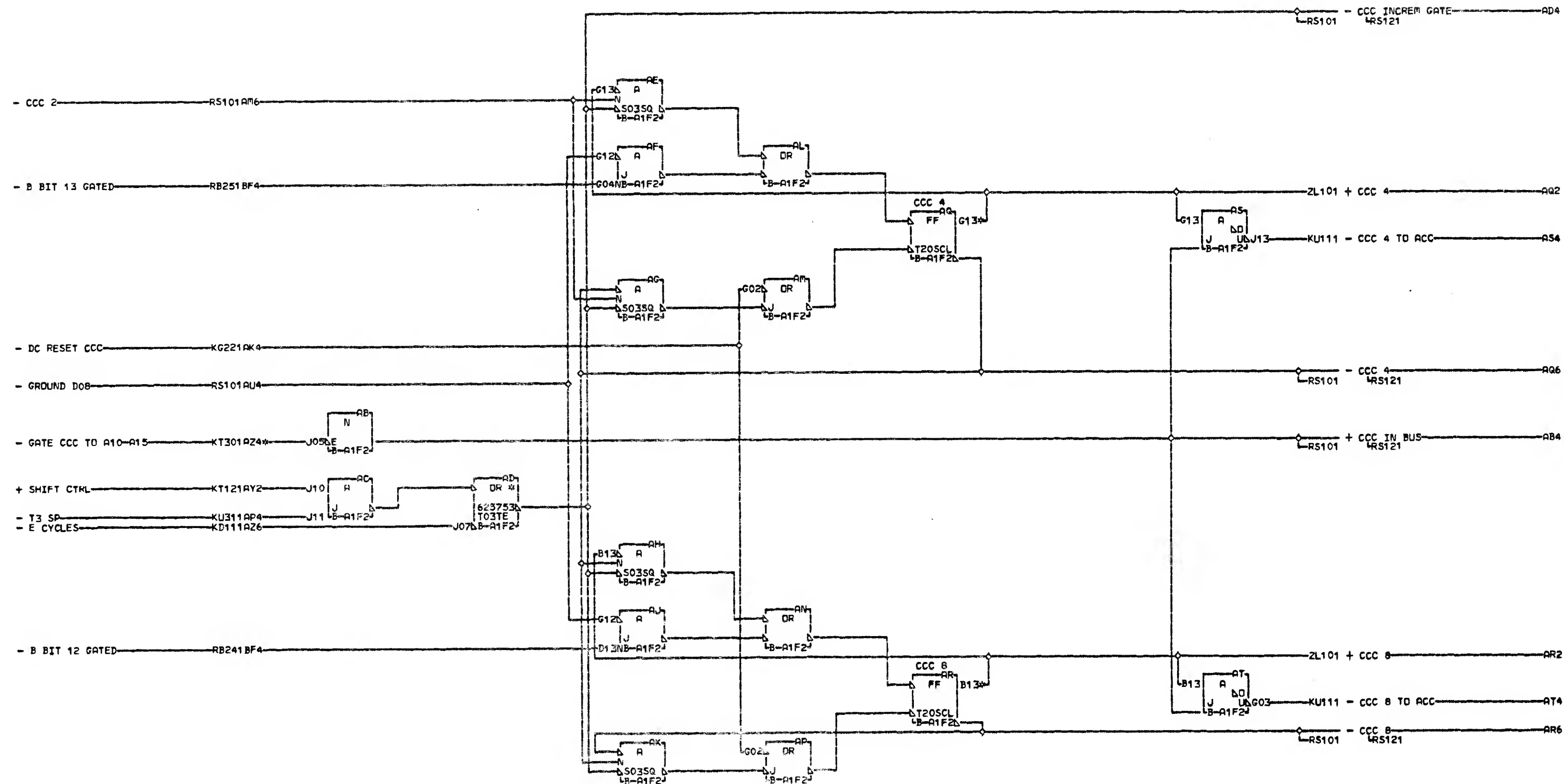
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AM2 B-A1A2B09

LDC TYPE  
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CYCLE CONTROL COUNTER 1 - 2	
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DATE	LAST EC
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FRAME	01
IBM CORP. GPD	P.N. 5889308

RS101

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KT301AZ4  
RESISTOR  
B-A1F2J05  
AQ2 B-A1A2B10  
AR2 B-A1A2D09

LDC. TYPE  
B-A1F2 6257

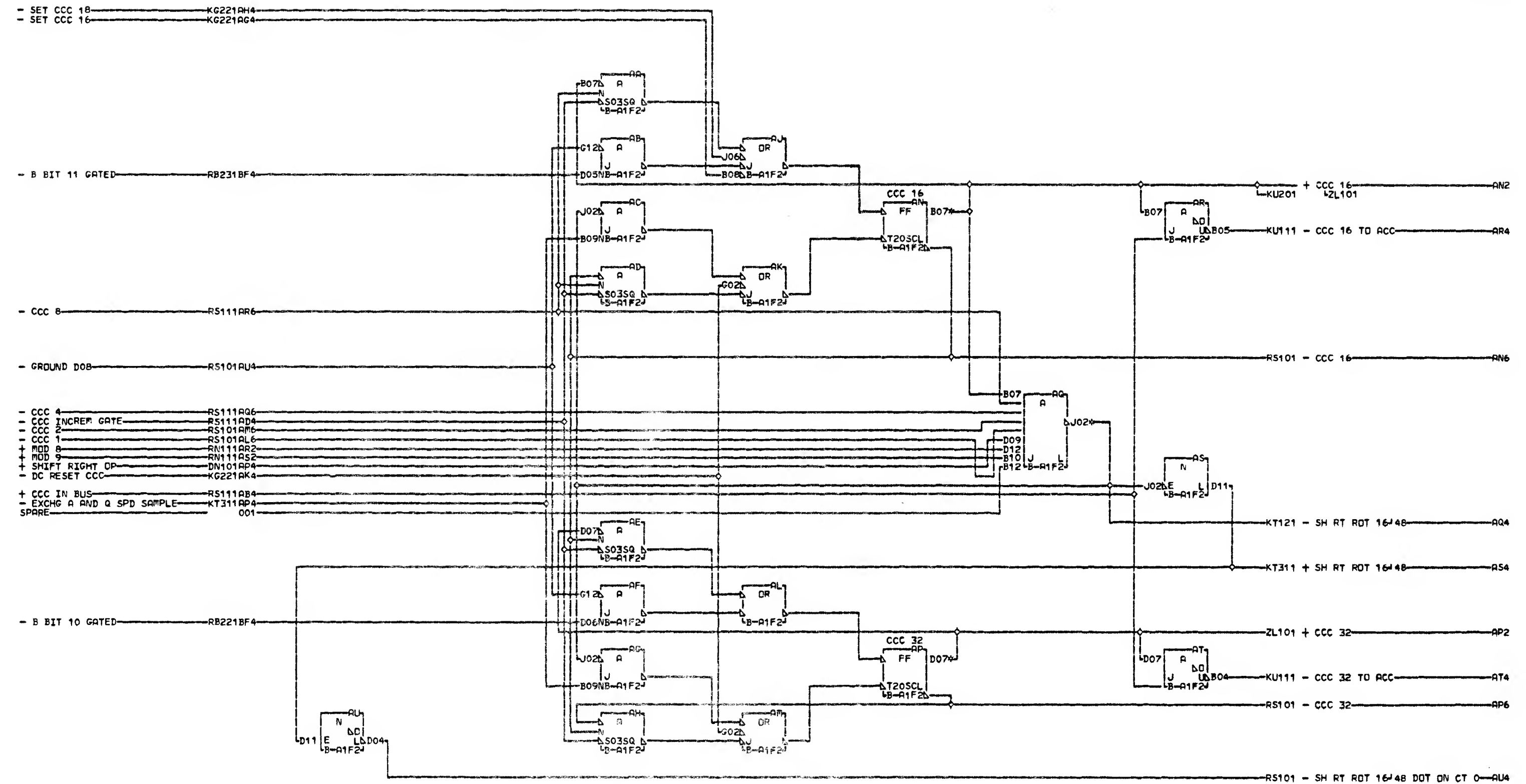
CYCLE CONTROL COUNTER 4 - 8	
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DATE	FRAME 01
LAST EC	IBM CORP. GPD
02-09-71 571150	P.N. 5889309

RS111

000

RS111

000

R  
S  
1  
2  
1

AN2 B-A1A2D10  
 AP2 B-A1A2D11  
 AQ4 RESISTOR  
 B-A1F2J02

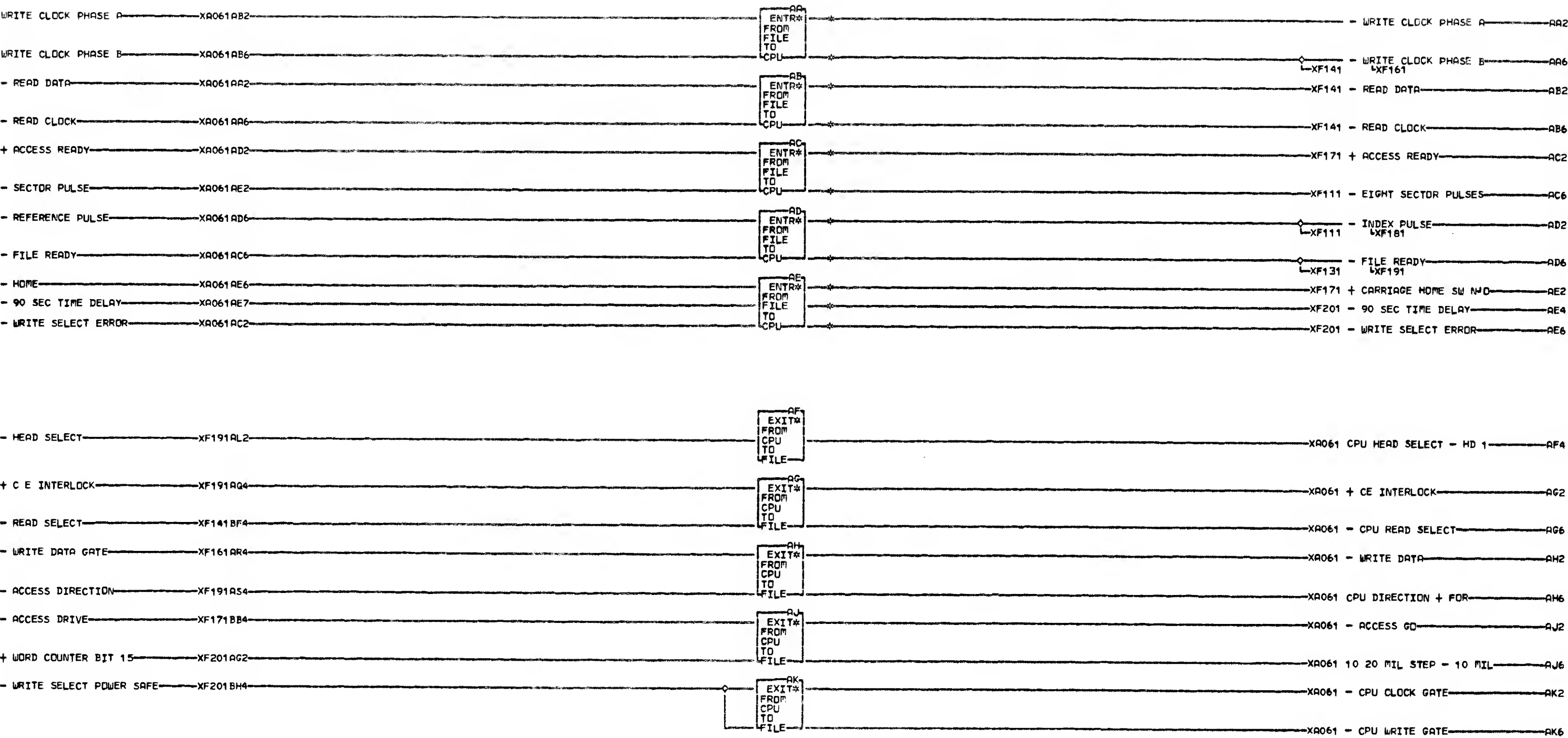
LDC TYPE  
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CYCLE CONTROL COUNTER 16 - 32	
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DATE	FRAME 01
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02-09-71 571150	P.N. 5889310

R  
S  
1  
2  
1  
000

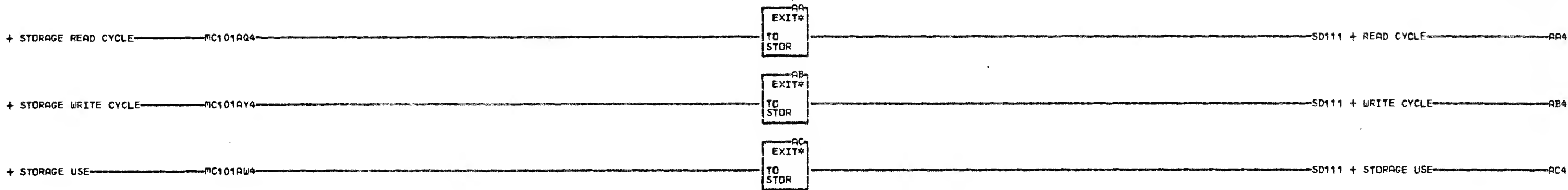
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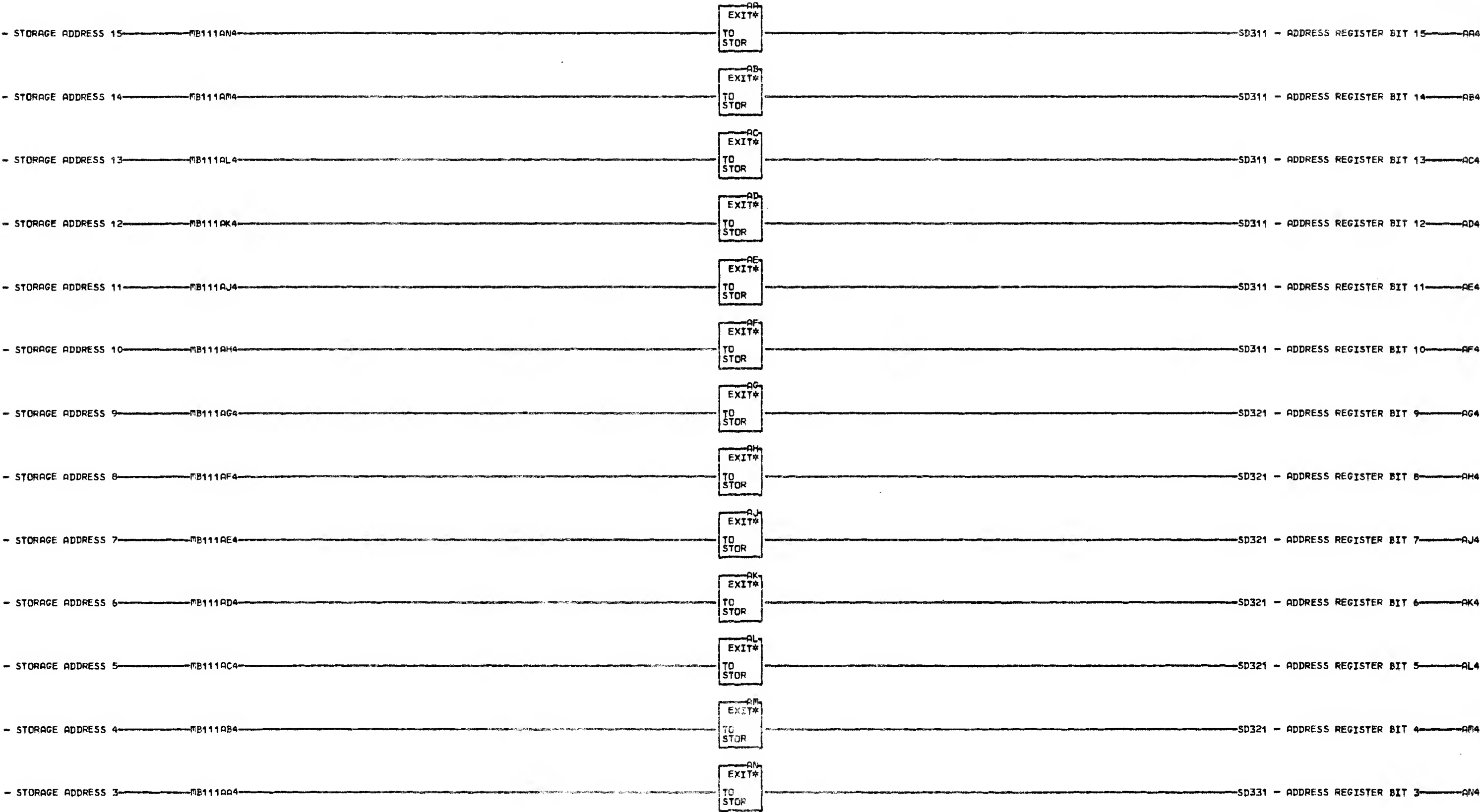


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AB2 A-C1N7B03  
AB6 A-C1N7D02  
AC2 A-C1N7B07  
AC6 A-C1N7D06  
AD2 A-C1N7B12  
AD6 A-C1N7D13  
AE2 A-C1N7B02

FILE - PROCESSOR INTERFACE  
E.C. - HISTORY MACH. 1131-C  
FRAME 01  
DATE LAST EC IBM CORP. GPD  
02-09-71 571150 P.N. 5889311



SJ-4 STORAGE INTERFACE	
E.C.-HISTORY	MACH.1131-C
	FRAME 01
	IBM CORP. GSD
DATE 02-26-71	LAST EC 571150
	P.N. 5889312



SJ-4 STORAGE INTERFACE

E.C.-HISTORY

DATE 02-26-71

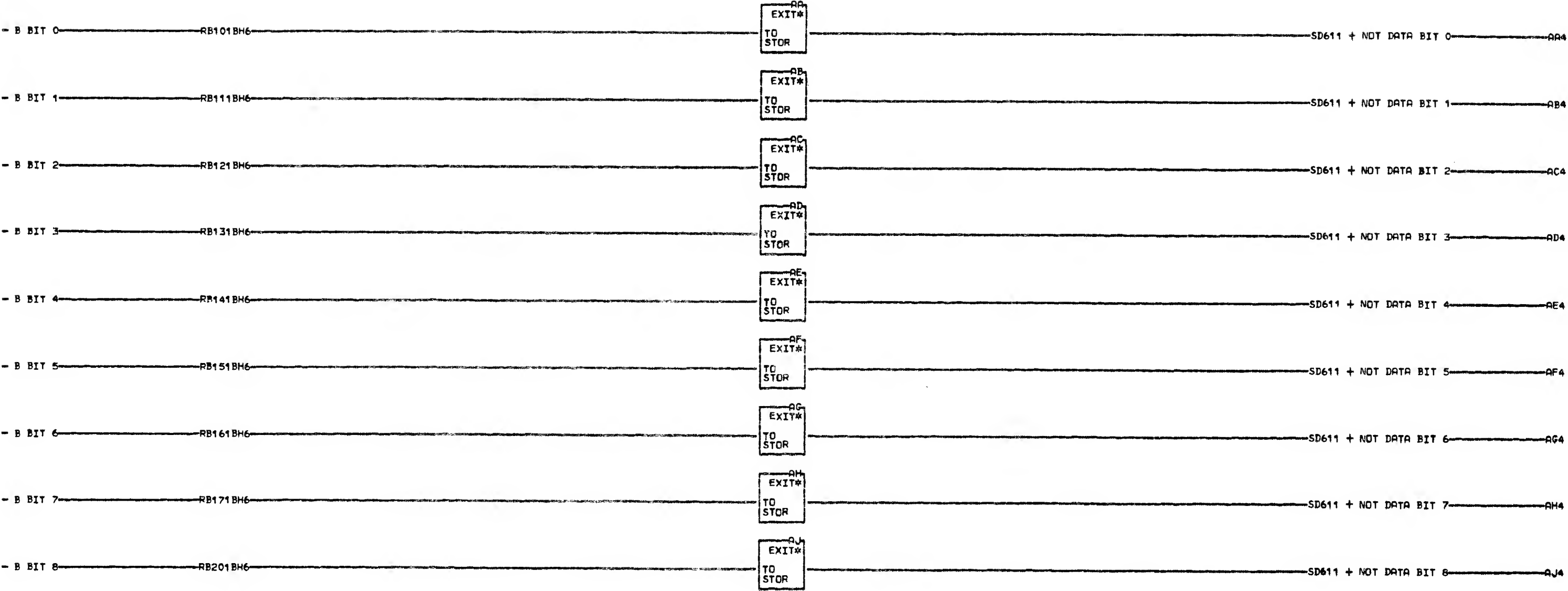
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MACH.1131-C

FRAME 01

IBM CORP. GSD

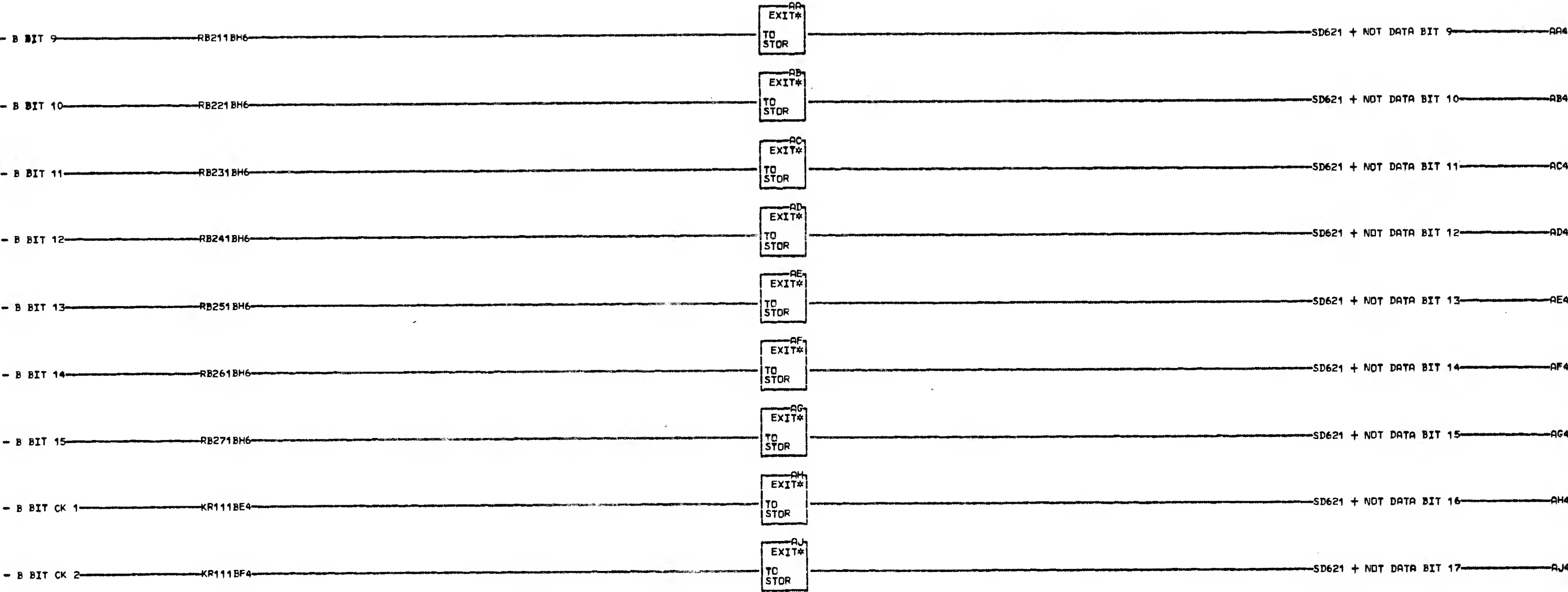
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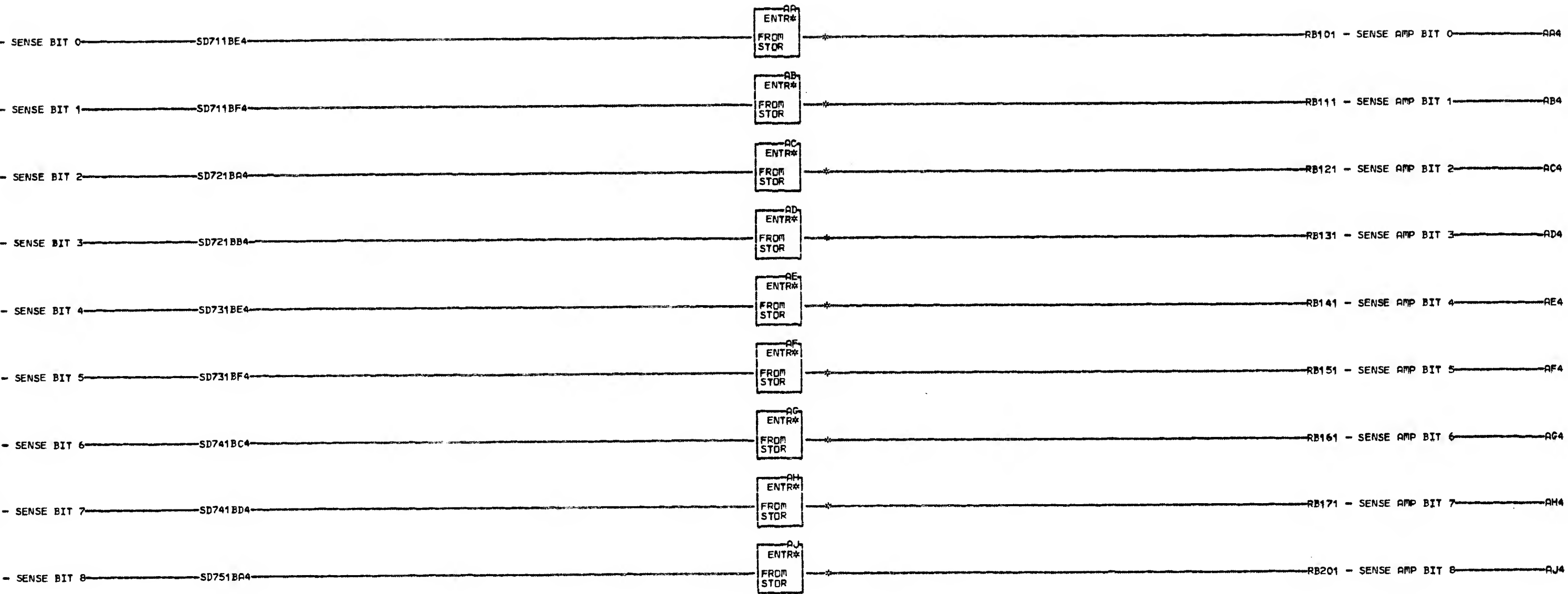


WONE  
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DATE	FRAME 01
LAST EC	IBM CORP. GSD
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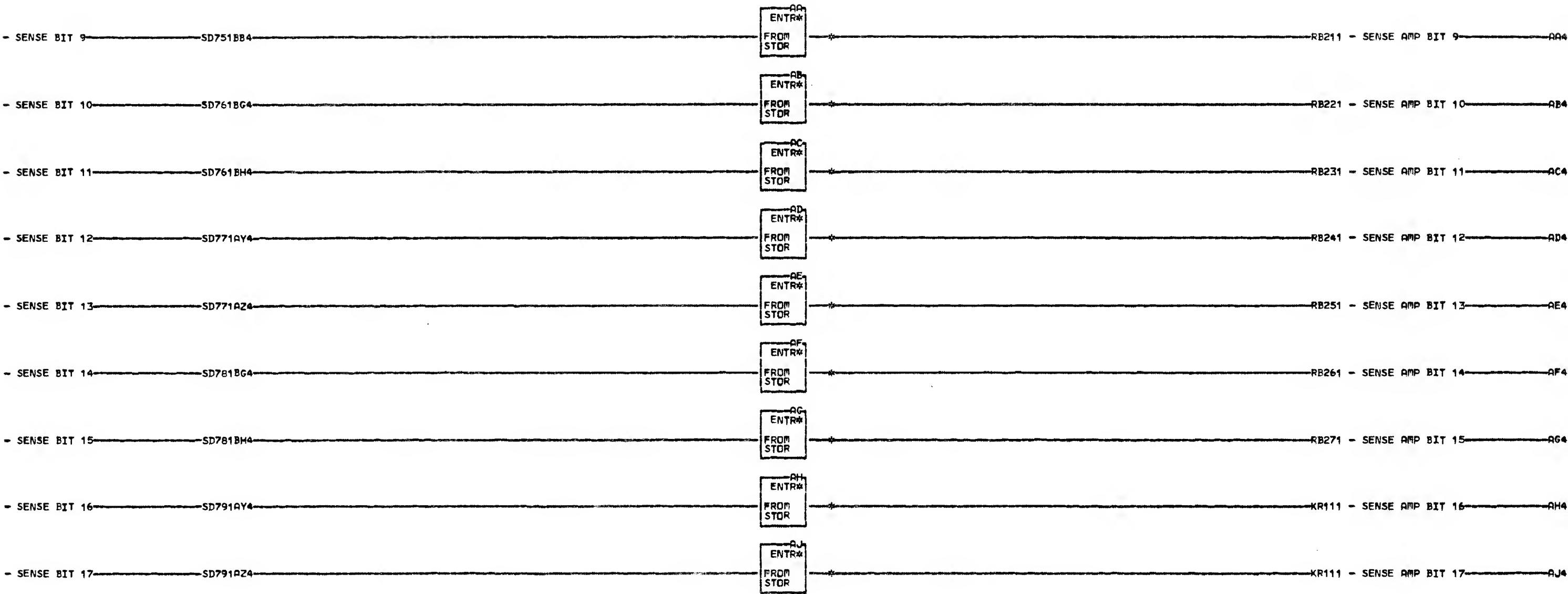


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AB4 B-C1B1B11 01B-B1B1E11 AJ4 B-C1C1E11  
01B-B1B1B11 AF4 B-C1C1B11 01B-B1C1E11  
AC4 B-C1B1C11 01B-B1C1B11  
01B-B1B1C11 AG4 B-C1C1C11  
AD4 B-C1B1D11 01B-B1C1C11  
01B-C1A1E11 AH4 B-C1C1D11  
01B-B1A1E11 01B-C1C1A11

SJ-4 STORAGE INTERFACE	
E.C.-HISTORY	MACH.1131-C
FRAME	01
DATE	LAST EC
02-26-71	571150
P.N.	5889316

1-10000



ONE  
1  
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AA4 B-C1D1A11 01B-C1K1E11 01B-B1F1C11 01B-A1L8A04  
01B-B1D1A11 01B-B1K1E11 01B-A1F1C11  
AB4 B-C1L1A11 01B-B1L1D11 AJ4 B-C1M1D11  
01B-B1L1A11 AF4 B-C1L1E11 01B-C1M1A11  
AC4 B-C1L1B11 01B-B1L1E11 01B-B1M1A11  
01B-B1L1B11 AG4 B-C1M1B11 01B-B1M1D11  
AD4 B-C1L1C11 01B-B1M1B11 01B-B1K8E06  
01B-B1L1C11 AH4 B-C1M1C11 01B-B1L8A04  
AE4 B-C1L1D11 01B-B1M1C11 01B-A1K8E06

SJ-4 STORAGE INTERFACE  
E.C.-HISTORY MACH-1131-C  
FRAME 01  
IBM CORP. GSD  
DATE LAST EC  
02-26-71 571150 P.N. 5889317

ONE  
1  
000

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6.1 SAMPLE TAPE	

1. PURPOSE

THE FUNCTION TEST IS DESIGNED (1) TO TEST FOR PROPER OPERATION OF THE PAPER-TAPE STATUS INDICATORS AND (2) TO TEST FOR ACCURATE DATA HANDLING BY THE PAPER-TAPE READER AND PAPER-TAPE PUNCH WHEN OVERLAPPED WITH OTHER ELEMENTS OF THE 1130 SYSTEM. THIS TEST MAY ALSO BE USED TO REPRODUCE TAPES.

2. PREREQUISITES

2.1\*\*\* PROGRAM PREREQUISITES

1130 DIAGNOSTIC MONITOR II

2.2\*\*\* EQUIPMENT PREREQUISITES

1. 1131 CPU WITH PROGRAM LOAD FROM EITHER CARD OR PAPER TAPE READER
2. 1134 PAPER TAPE READER AND/OR 1055 PAPER TAPE PUNCH.
3. AT LEAST 750 WORDS OF AVAILABLE CORE STORAGE.

3. OPERATING PROCEDURE

THESE OPERATING PROCEDURES APPLY TO SINGLE PROGRAM OPERATION ONLY. FOR OVERLAP OPERATION, REFER TO SECTION 3.2.3 OF THE 1130 DIAGNOSTIC MONITOR II DOCUMENTATION.

3.1\*\*\* PROGRAM LOADING

FOR THE CONVENIENCE OF 'READER ONLY' SYSTEMS, THE TEST PATTERN HAS BEEN INCLUDED ON THE END OF THE PAPER TAPE PROGRAM TAPE AND MAY BE IDENTIFIED BY COMPARING WITH THE SAMPLE TAPE. SECTION 6.1.

STANDARD MONITOR LOADING PROCEDURES APPLY

THESE PROCEDURES ARE SUMMARIZED HERE. SEE DM USE PROCEDURE FOR DETAILS.

1. SET FIRST TYPEWRITER TAB 20 CHARACTERS FROM LEFT MARGIN.
2. SET BIT SWITCH 15 OFF - LOAD AND GO  
ON - TO HALT AFTER LOADING

IF HALT AFTER LOADING, SELECT PROGRAM OPTIONS THEN TURN OFF HALT SWITCH OR FOLLOW NORMAL RESTART PROCEDURE (SECTION 3.5).

3. LOAD DIAGNOSTIC MONITOR AND THIS PROGRAM.
4. SELECT PROGRAM OPTIONS, IF DESIRED.

\*\*\*\*\*

3.2\*\*\* PROGRAM OPERATION.

3.2.1 PROGRAM CONTROL - FUNCTION 0

1. SET SWITCHES 0-7 TO 01.
2. SET SWITCHES 8-15 AS DESIRED.

SW	FUNCTION
8	RESTART
9	ROUTINE START MESSAGE
10	LOCK ON FUNCTION
11	LOOP PROGRAM
12	LOOP ON ERROR
13	BYPASS ERROR PRINTOUT
14	HALT ON ERROR
15	HALT

3. PRESS INT REQ KEY ON CONSOLE.

\*\*



### 3.2.2 ROUTINE SELECTION - FUNCTION 1

THE SELECTED ROUTINE WILL LOOP UNTIL A NEW ROUTINE IS SELECTED  
OR ROUTINE SELECTION IS RESET.

#### 1. TO SET ROUTINE SELECTION

- SET SWITCHES 0-7 TO 41.
- SET ROUTINE NUMBER IN SWITCHES 12-15.

RTN	DESCRIPTION	
1	PUNCH PATTERN	NORMAL ROUTINES- THE PROGRAM STARTS WITH ROUTINE 1, RUNS EACH ROUTINE IN SEQUENCE THEN TERMINATES AFTER ROUTINE 3.
2	READ PATTERN	
3	PUNCH AND READ PATTERN	
4	* REPRODUCE TAPE	OPTIONAL ROUTINES THESE ROUTINES RUN ONLY IF SELECTED.
5	* PUNCH BIT SWITCH SETTING	

\* = REFER TO SECTION 3.2.3 FOR SPECIAL INSTRUCTIONS.

- PRESS INT REQ KEY ON CONSOLE.

#### 2. TO RESET ROUTINE SELECTION, SET AS IF SELECTING ROUTINE ZERO \*\*

### 3.2.3 PROGRAM OPTIONS

#### 1. PUNCH FROM BIT SWITCHES

ROUTINE 5 PUNCHES ALTERNATELY FROM SWITCHES 0-7 AND SWITCHES  
8-15. AFTER THE ROUTINE IS SELECTED, SET THE DESIRED PATTERN  
IN THESE SWITCHES.

#### 2. RE ALIGN PAPER TAPE

TO REALIGN THE PAPER TAPE AT ANY TIME DURING RUNNING OF THE  
PROGRAM -

- SET SWITCHES TO 8180
- PRESS INT REG. KEY.

\*\*\*\*\*

### 3.3\*\*\* PROGRAM HALTS

#### 3.3.1 NORMAL HALTS

HALT NO. (8 REG)	DESCRIPTION	RESTART ACTION
3001	PROGRAM STOP OR ADDRESS STOP	PRESS START
3002	HALT ON ERROR	DISPLAY MODE PRESS START. RUN MODE - PRESS START

\*\*

### 3.3.2 ERROR HALTS

HALT NO. (8 REG)	DESCRIPTION	RESTART ACTION
30F1	CHECK SUM ERROR ON FIRST CARD OF LOADER	RELOAD
30F2	READER OSW ERROR WHEN LOADING LOADER	RELOAD
30F3	CARD 2 OF LOADER DID NOT LOAD	RELOAD
30F4	CAN NOT CLEAR CORE - DUE TO ERROR IN ADDRESSING UPPER CORE.	
30F5	READER CHECK WHEN LOADING MONITOR OR TEST PROGRAM	NPRO THEN PLACE CARDS RUN OUT IN FRONT OF REMAINING DECK AND PRESS START.
30F6	MONITOR DID NOT LOAD	RELOAD
30F7	CHECK SUM WHEN LOADING MONITOR	RELOAD
30F8	READER NOT READY	MAKE READER READY
30F9	INVALID INTERRUPT WHICH WILL NOT RESET	PRESS RESET AND START
30FA	CONSOLE PRINTER HANG UP - BUSY WILL NOT GO OFF	FIX THE CONSOLE PRINTER OR NCP THIS WAIT

\*\*\*\*\*

### 3.4\*\*\* PROGRAM TERMINATION

IF LOOP PROGRAM HAS NOT BEEN SPECIFIED THE PROGRAM WILL TERMINATE  
AT THE END OF ROUTINE 3. ROUTINE 4 AND 5 WILL ONLY RUN IF  
SELECTED.

IF ANY ROUTINE IS SELECTED THAT ROUTINE WILL LOOP AND WILL NOT  
TERMINATE.

\*\*\*\*\*

### 3.5\*\*\* RESTART

- SET SWITCHES 0-7 TO 01.
- TURN ON SWITCH 8.
- SET DESIRED CONTROL IN SWITCHES 9-14.
- PRESS INTERRUPT REQUEST KEY.

\*\*\*\*\*

4. PRINTOUTS

ALL PRINTOUTS ARE IN THE STANDARD FORMAT.

APPNN OORR AAAA (MESSAGE)  
OR  
EPPNN OORR AAAA (MESSAGE)

WHERE A IDENTIFIES STATUS MESSAGES  
E IDENTIFIES ERROR MESSAGES  
PP IS THE PID OF THE PROGRAM CAUSING THE MESSAGE  
THIS WILL BE EITHER 00 FOR MESSAGES  
ORIGINATED BY THE MONITOR OR  
08 FOR MESSAGES ORIGINATED BY  
THIS PROGRAM.  
NN IS THE MESSAGE SEQUENCE NUMBER  
RR IS THE ROUTINE NUMBER  
AAAA IS THE ADDRESS OF THE ROUTINE  
MESSAGE IS ANY VARIABLE INFORMATION

4.1\*\*\* STATUS MESSAGES

A0000 NUM PID AORS RELF LD  
XXXX XXXX XXXX XXXX

THIS MESSAGE IS PRINTED FOLLOWING THE LOADING OF ANY PROGRAM  
(EXCEPT MONITOR). THE MESSAGE GIVES THE LOAD SEQUENCE NUMBER,  
THE PROGRAM ID, THE ADDRESS INTO WHICH THE PROGRAM WAS LOADED,  
AND THE RELOCATION FACTOR.

A0001 SWS PID  
XXXX XXXX

THIS MESSAGE IS PRINTED EACH TIME A VALID SWITCH ENTRY IS READ  
BY THE MONITOR. THE MESSAGE CONTAINS THE SWITCH SETTING READ  
TOGETHER WITH THE PROGRAM ID OF THE PROGRAM INTO WHICH THE  
CONTENTS OF SWITCHES 8-15 WERE STORED. IF THE SWITCH ENTRY  
CALLED FOR HALT OF ANY PROGRAM, THE WORD HALT WILL FOLLOW THE  
MESSAGE.

A0800 OORR AAAA

ROUTINE START MESSAGE - IF SWITCH 9, FUNCTION 0, IS TURNED ON,  
THIS MESSAGE WILL BE PRINTED BEFORE THE START OF EACH ROUTINE.  
R IS THE NUMBER OF THE NEXT ROUTINE AND AAAA IS THE STARTING  
ADDRESS.

A0801 OORR AAAA TAPE ALIGNED

THE PAPER TAPE TEST RECORD IS ASSUMED TO BE PROPERLY ALIGNED IN THE  
READER AT THIS TIME. THIS MESSAGE IS RECEIVED ONLY AFTER OPERATOR  
SPECIFICATION OF REALIGN TAPE OPTION.

4.2\*\*\* ERROR MESSAGES

THE DSW IS CHECKED FOR ABSOLUTE CORRECTNESS AT ALL TIMES. IF AN  
ERROR IS DETECTED ONE OF THE MESSAGES BELOW WILL INDICATE THE  
PROBLEM. IT IS LEFT TO THE OPERATOR TO ANALYZE THE DSW FOR THE  
SPECIFIC PROBLEM AREA.

\*\*\*\*\*  
\* THE PAPER TAPE DSW \*  
\*-----\*  
\* BIT \*  
\* 0 PARITY ERROR \*  
\* 1 READER SERVICE \*  
\* 2 NOT USED \*  
\* 3 PUNCH SERVICE \*  
\* 4 READER BUSY \*  
\* 5 READER NOT READY \*  
\* 6 PUNCH BUSY \*  
\* 7 PUNCH NOT READY \*  
\* 8 NOT USED \*  
\* 9 NOT USED \*  
\* 10 NOT USED \*  
\* 11 NOT USED \*  
\* 12 NOT USED \*  
\* 13 NOT USED \*  
\* 14 NOT USED \*  
\* 15 NOT USED \*  
\*\*\*\*\*

E0001 SWS INVLD  
XXXX

THE SETTING OF SWITCHES 4-7 DID NOT EQUAL THE LOAD SEQUENCE  
NUMBER OF ANY PROGRAM IN CORE.

E0003 OVR CORE

THE PROGRAM WHICH THE LOADER WAS ATTEMPTING TO LOAD  
EXCEEDED AVAILABLE CORE. LOADING WAS TERMINATED.

E0004 CKSUM

A CHECK SUM ERROR WAS DETECTED WHILE LOADING A TEST PROGRAM.  
THIS ERROR OCCURS UNDER ANY OF THE FOLLOWING CONDITIONS.

1. A CARD IS MISSING OR IS OUT OF SEQUENCE.
2. THERE IS AN EXTRA CARD IN THE DECK.
3. THE PUNCHED INFORMATION ON THE CARD IS NOT CORRECT.
4. DATA WAS LOST OR PICKED UP DUE TO A MACHINE MALFUNCTION.
5. DUE TO A CPU MALFUNCTION, THE CHECK SUM WAS NOT  
CORRECTLY CALCULATED.

WHEN THIS ERROR OCCURS ATTEMPT TO RELOAD THE PROGRAM.

E0005 000N XXXX

THIS ERROR WILL OCCUR IF AN INTERRUPT OCCURS, BUT THE ILSW  
WAS NOT CORRECT. N IS THE INTERRUPT LEVEL AND XXXX IS THE  
ILSW. THIS PRINTOUT WILL ONLY OCCUR IF THE INTERRUPT IS RESET  
BY A BOSI. NO ATTEMPT IS MADE BY THE ERROR ROUTINE TO RESET  
THE REQUEST BIT.

E0801 OORR AAAA XXXX 0X00

DSW ERROR AFTER READER-CONTROL COMMAND

EOB02 00RR AAAA XXXX 0X00  
DSW ERROR AFTER PUNCH COMMAND  
-----

EOB03 00RR AAAA XXXX 0FDD  
DSW ERROR AFTER READER-CONTROL AND PUNCH COMMANDS  
-----

EOB04 00RR AAAA XXXX 0X00  
DSW ERROR WHEN CHECKING FOR READER-READY  
-----

EOB05 00RR AAAA XXXX 0X00  
DSW ERROR WHEN CHECKING FOR PUNCH-READY  
-----

EOB06 00RR AAAA XXXX 4000  
READER SERVICE-REQUEST DSW ERROR  
-----

EOB07 00RR AAAA XXXX 1000  
PUNCH SERVICE-REQUEST DSW ERROR  
-----

EOB08 00RR AAAA XXXX 5000  
DSW ERROR WHEN PUNCH AND READER INTERRUPTS RECEIVED AT SAME TIME  
-----

EOB09 00RR AAAA XXXX X000  
DSW ERROR WHEN FIRST INTERRUPT WAS RECEIVED. AT THIS TIME BOTH THE READER AND THE PUNCH ARE BEING RUN UNDER RACE CONDITIONS. THE DSW FOR THE DEVICE THAT INTERRUPTS FIRST IS ANALYZED FIRST. ANY ERROR WILL BE PRINTED AS AN EOB09. SIMILARLY FOR THE SECOND INTERRUPT, AN ERROR WILL BE PRINTED AS EOB10.  
-----

EOB10 00RR AAAA XXXX X000  
DSW ERROR WHEN FIRST INTERRUPT WAS RECEIVED. AT THIS TIME BOTH THE READER AND THE PUNCH ARE BEING RUN UNDER RACE CONDITIONS. THE DSW FOR THE DEVICE THAT INTERRUPTS FIRST IS ANALYZED FIRST. ANY ERROR WILL BE PRINTED AS AN EOB09. SIMILARLY FOR THE SECOND INTERRUPT, AN ERROR WILL BE PRINTED AS EOB10.  
-----

EOB11 00RR AAAA XXXX 0X0D  
NO READER INTERRUPT RECEIVED. ( XXXX IS THE LAST DSW SENSED IMMEDIATELY AFTER THE READER-CONTROL COMMAND.  
-----

EOB12 00RR AAAA XXXX 0X0D  
NO PUNCH INTERRUPT RECEIVED (XXXX IS THE LAST DSW SENSED IMMEDIATELY AFTER THE READER-CONTROL COMMAND )  
-----

EOB13 00RR AAAA XXXX 0F00  
NO PUNCH OR READER INTERRUPT (XXXX IS THE LAST DSW SENSED IMMEDIATELY AFTER THE READER-CONTROL AND PUNCH COMMANDS)  
-----

EOB14 00RR AAAA DATA ERR  
XX00 XX00  
READ/COMPARE ERROR (RDR BUFFER CHANGED)  
DATA (XX00) PRINTED AS ENTERED IN CORE - CHANNELS 8-1 RESPECTIVELY  
-----

EOB15 00RR AAAA DATA ERR  
XX00 XX00  
READ/COMPARE ERROR ( RDR BUFFER UNCHANGED)  
DATA (XX00) PRINTED AS ENTERED IN CORE - CHANNELS 8-1 RESPECTIVELY  
-----

EOB16 00RR AAAA XXXX C0C0 XX00  
READER-DSW READ ERROR WHEN REPRODUCING TAPES. IF TAPE STOPPED, THE FIRST CHARACTER BEYOND THE READ STATION WAS PERHAPS IMPROPERLY READ. THIS CHARACTER HAS NOT AS YET BEEN PUNCHED. BACK THE READER UP ONE CHARACTER AND PRESS START ON THE P-C.  
DATA (XX00) PRINTED AS ENTERED IN CORE - CHANNELS 8-0 RESPECTIVELY.  
-----

EOB18 00RR AAAA READ READ  
1ST 2ND  
XX00 XX00  
CONSECUTIVE READ ERROR DATA (XX00) SHDULD AGREE.  
-----

EOB19 00RR AAAA XX00 YY00  
THE PRDGRAM COULD NOT ALIGN THE TAPE IN THE READER IN THE LAST 500 CHARACTERS.  
THE PROBLEM IS,  
A. OPEN DATA CHANNEL(S). XX00 SHOULD BE FF00, WHICH IS THE CHARACTER THAT WOULD BE PLACED IN CORE BY READING AN ALL-BITS CHARACTER. ANY MISSING BIT(S) INDICATE THE OPEN DATA CHANNEL(S).  
B. SHORTED DATA CHANNEL(S). YY00 SHOULD BE 0000, WHICH IS THE CHARACTER THAT WOULD BE PLACED IN CORE BY READING A NO-BITS CHARACTER. ANY BIT(S) PRESENT INOICATE THE SHORTED CHANNEL(S).  
C. IF BOTH XX00 AND YY00 ARE CORRECT,  
1. THE TAPE IS NOT IN THE READER CORRECTLY, OR  
2. THE READER CANNOT READ THE FIRST 8 CHARACTERS PROPERLY. IF SO, TRY ONE OF THESE,  
A. TRY RUNNING THE REPRODUCE TAPE ROUTINE (ROUTINE 4).  
B. TRY MANUALLY ALIGNING THE TAPE IN THE READER. THEN SPECIFY THE MANUAL TAPE ALIGNMENT OPTION (TABLE 0) AND RESTART THE PROGRAM.  
-----

EOB20 00RR AAAA XXXX  
A SPURIOUS OR NON-RESETABLE INTERRUPT HAS BEEN RECEIVED.  
-----

5. COMMENTS

THE FUNCTION TEST CONSISTS OF THREE NORMAL ROUTINES AND TWO OPTIONAL ROUTINES. NORMALLY, ROUTINES ONE THROUGH THREE ARE RUN IN ORDER. ALL ROUTINES ARE DESCRIBED IN PARAGRAPHS 5.1 THROUGH 5.5. THE FUNCTION TEST,

- A. CHECKS DSW FOR PROPER BITS BEFORE ISSUING WRITE (PUNCH) OR CONTROL (READER) COMMANDS.
- B. CHECKS DSW FOR CORRECTNESS AFTER XIO INSTRUCTION.
- C. CHECKS FOR INTERRUPT FROM DEVICE WITHIN SPECIFIED TIME LIMIT.
- D. CHECKS DSW AFTER INTERRUPT IS RECEIVED.

5.1\*\*\* ROUTINE NO. 1 (PUNCH TEST)

TEST NO. 1 CHECKS THE OPERATION OF THE PAPER-TAPE PUNCH WHILE PUNCHING TWO TEST RECORDS. THE RECORD INCLUDES A RIPPLE PATTERN AND AN ALL-CHARACTER PATTERN. (REFER FIGURE 1).

5.2\*\*\* ROUTINE NO. 2 (READER TEST)

THIS TEST CHECKS THE OPERATION OF THE PAPER TAPE READER WHILE READING ONE RECORD PRODUCED BY THE PUNCH TEST. THE TAPE IS NORMALLY AUTOMATICALLY ALIGNED IN THE READER BY READING EIGHT CONSECUTIVE CHARACTERS CORRECTLY. A MESSAGE IS PRINTED WHEN THE TAPE IS PROPERLY ALIGNED. IF DESIRED, THE OPERATOR CAN MANUALLY PLACE THE TAPE IN THE READER ON THE FIRST CHARACTER OF THE RIPPLE PATTERN AND SPECIFY THE MANUAL ALIGNMENT OPTION AS IN TABLE O. THE TAPE MAY ALSO BE REALIGNED IN THE READER AT ANY TIME.

EACH CHARACTER READ IS COMPARED WITH A WORD IN STORAGE. AN UNEQUAL COMPARE WILL CAUSE AN ERROR TYPEOUT. SEE 4.2. THERE WILL BE ONE ERROR TYPEOUT FOR EACH READ/COMPARE ERROR.

THESE ERROR PRINTOUTS MAY INDICATE THE TAPE IS NOT IN THE PROPER POSITION IN THE READER. THE TAPE MAY BE MANUALLY ADJUSTED IN THE READER OR THE OPERATOR MAY SELECT REALIGN TAPE. (TABLE O)

5.3\*\*\* ROUTINE NO. 3 (PUNCH/READ/COMPARE TEST)

THIS TEST CHECKS THE FUNCTION AND RELIABILITY OF THE PAPER TAPE READER AND PUNCH WHEN OPERATED TOGETHER. BOTH DEVICES ARE OPERATED AT THE SAME SPEED. THE DATA READ IS COMPARED WITH THE DATA PUNCHED IN A NEW TAPE. THIS TEST ALSO HAS THE TAPE ALIGNMENT FEATURE OF TEST NO. 2. THE TEST IS COMPLETE AFTER ONE RECORD HAS BEEN PROCESSED.

5.4\*\*\* ROUTINE NO. 4 (REPRODUCE-TAPES TEST)

THE OPERATOR HAS THE OPTION OF REPRODUCING ANY TAPE. THE OPERATOR MUST SPECIFY HALT ON ERROR OPTION IN MONITOR CONTROL TABLE O. AGAIN, ALL DEVICE STATUS CHECKING DONE IN TESTS NOS. 1 AND 2 IS INCLUDED IN THIS TEST. ALSO, A DSW ERROR WHEN READING THE TAPE WILL CAUSE A DELAY OF THE PROGRAM UNTIL THE OPERATOR CAN INTERVENE. OTHER THAN E016 IS PRINTED PRESS START AND THEN VERIFY THAT THE PROPER PUNCHES ARE OBTAINED. SEE SPECIFIC ERROR MESSAGE FOR AIO IN INSTRUCTIONS.

5.5\*\*\* ROUTINE NO. 5 (PUNCH BIT SWITCH IMAGE)

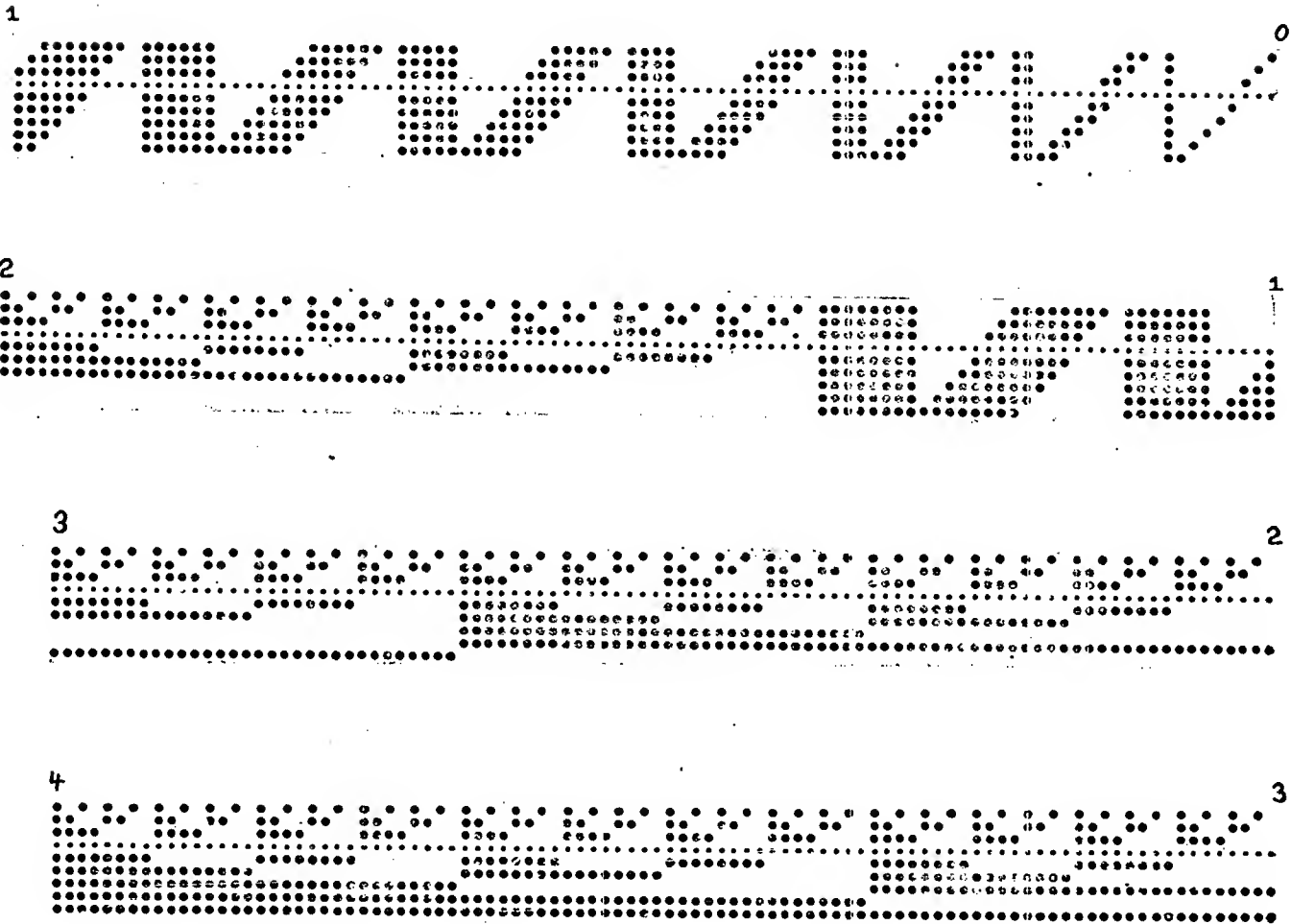
THIS ROUTINE PUNCHES THE DATA ENTERED IN THE BIT SWITCHES. THE ROUTINE WILL ALTERNATELY PUNCH FROM SWITCHES 0-7 THEN SWITCHES 8-15.

PAPER TAPE READER/PUNCH FUNCTION TEST

6. APPENDIX

6.1 SAMPLE TAPE

FIGURE 1 SHOWS AN EXAMPLE OF A PAPER TAPE RECORD.



```
*****
*          EQUATE TABLE
*****
*  THIS TABLE EQUATES TEST PROGRAM LABELS
*  TO THEIR EQUIVALENT DIAGNOSTIC MONITOR
*  ADDRESSES.
*
0160 BEGIN EQU      /160      BEGIN ROUTINE
0161 START EQU     8EGIN&1    SUPERVISOR ROUTINE
0162 ERROR EQU     START&1    ERROR LOG ROUTINE
0163 LOG EQU       ERROR&1    STATUS LOG ROUTINE
0164 END EQU       LOG&1      END ROUTINE
*-----*
*  MONITOR CONTROL WORD ADDRESSES
*
0165 RTNSW EQU     END&1      ROUTINE START SWITCH
0166 ERLCK EQU     END&2      LOCK ON ERROR CONTROL
0167 LOGBY EQU     END&3      I/O BUSY SW ADR
0168 RLCF EQU      END&4      RELOCATION FACTOR ADR
*-----*
*  INTERRUPT TRANSFER VECTOR ADDRESSES
*
017A ILO EQU      /17A      INTERRUPT LEVEL ZERO
018A IL1 EQU      ILO&16    INTERRUPT LEVEL ONE
019A IL2 EQU      IL1&16    INTERRUPT LEVEL TWO
01AA IL3 EQU      IL2&16    INTERRUPT LEVEL THREE
01BA IL4 EQU      IL3&16    INTERRUPT LEVEL FOUR
01BB RQTY EQU      IL4&1     TYPR SVC REQUEST INTERPT
01BC RQKB EQU      RQTY&1    KEYBOARD REQUEST INTERPT
01BD SVKB EQU      RQKB&1    KEYBOARD SERVICE INTERPT
*****
0000 ORG          *&1500
*****
*
*****
*          DIAGNOSTIC MONITOR
*          CONTROLLED
*          1130 PAPER TAPE TEST
*****
*
*          PROGRAM STATUS TABLE
*
050C 0 030B PID DC      /030B      PROGRAM ID NUMBER
0500 0 0000 RID DC      /0000      ROUTINE NUMBER
05DE 0 0000 RAD OC      /0000      ROUTINE ADDRESS
050F 0 0000 SWO DC      /0000      FCN 0 - CONTROL
05E0 0 0000 SW1 DC      /0000      FCN 1 - INITIAL RTN
05E1 0 0000 SW2 DC      NOT USED
05E2 0 0000 SW3 OC      /0000      PUNCH SWS WORD
05E3 1 0647 OC      LOOP      LDOP PROGRAM ADDRESS
05E4 1 0634 DC      RESRT     INITIALIZATION ADDR
05E5 0 0000 MLSCF DC      /0000    MAIN LINE SEQ CNTL
05E6 1 0634 DC      RESRT
05E7 0 0000 OC      /0000      COUNTER ENTRY
05E8 0 FFFF TERM DC     /FFFF      TERMINATOR
*****
*
*
*          INTERRUPT ROUTINE
*
05E9 0 0000 POINT DC     /0000
05EA 1 0C00 0740 XIO L   XIOS0    SENSE OSW
05EC 0 0036 STO      OSWIT
05ED 1 6780 062E LOX I3  INTEx
05EF 1 4F80 0625 BSC I3  HANDL-1  BR TO PROPER CHECK
*
05F1 1 F700 062B SINT EOR L3  INTEx-3 CHECK SINGLE INTRPT
```

```
05F3 1 E7B0 062E ANO I3  INTEx
05F5 1 4C18 061C BSC L   PINT3,&- 8R IF OSW OK
05F7 1 6700 075F LDX L3  NIPES SVC REQ ERROR
05F9 0 7024 MDX PINT1
*
05FA 0 F030 DINT EOR INTED CK DSW FOR 2 SVC REQ
05FB 0 4C00 0000 BSC L   /0000 8R IF 2ND DOUBLE INT
05F0 0 002B 0INT1 STO OSWDI CK FIRST INTERPT OSW
05FE 0 E02C ANO INTED
05FF 0 002A STO DSWID
0600 1 4C20 0610 BSC L   DINT4,Z EXIT IF ONLY ONE REC
0602 0 C026 LO DSWDI
0603 1 4C18 061C BSC L   PINT3,&- BR IF DSW OK
0605 1 6700 0769 LDX L3  0INE1 PRINT DSW ERROR NEXT
0607 0 7016 MDX PINT1
*
0608 0 EB21 DINT2 OR OSWID CHECK SECOND INTRPT DSW
0609 0 D019 STO OSWIT
060A 0 F020 EOR INTED
*
060B 1 4C1B 061C BSC L   PINT3,&- BR IF OSW OK
060D 1 6700 076E LDX L3  0INE2
060F 0 700E MDX PINT1
*
*
0610 0 1340 DINT4 SLCA 3 0
0611 0 1001 SLA 1
0612 0 0011 STO BUMRQ ZERO IF NO IEQ BIT
0613 1 6700 0608 LDX L3  DINT2 SET SECOND INT SW
0615 0 6BE6 STX 3  DINT1-1
0616 0 700A MDX XIT
*
0617 1 6700 0755 EINT LDX L3  SPUR SPURIOUS OR NON-
0619 1 6F00 05E5 STX L3  MLSCF RESETABLE INTERRUPT
061B 0 7005 MDX XIT
*
061C 1 6700 077D PINT3 LDX L3  0INE6 OSW OK - RET TO MLINE
061E 0 6BC7 PINT1 STX 3  MLSCF&1
*
061F 0 6300 LDX 3 0 RESET INTRPT EXPECTED
0620 0 6B0D STX 3  INTEx
*
0621 1 4CB0 05E9 XIT BSC I POINT BUG OUT
*****
*
0623 0 0000 DSWIT DC /0000 LAST INTERRUPT DSW
0624 0 0000 BUMRQ DC /0000
0625 1 0617 DC EINT
*
0626 1 05F1 HANDL OC SINT INTERRUPT BR ADRS
0627 1 05F1 DC SINT PUNCH INTR CK ADRS
0628 1 05FA DC DINT RDR INTER CK ADRS
0629 0 0000 DSWDI DC /0000 RDR-PUNCH INT CK
062A 0 0000 DSWIO OC /0000 IDENTIFY INT YET EXP
*
062B 0 5000 INTED DC /5000 RDR-PCH SVC REQ EXP
062C 0 4000 DC /4000 RDR SVC REQ
062D 0 1000 DC /1000 PCH SVC REQ
062E 0 0000 INTEx DC /0000 INTERRUPT EXPECTED
*
* 1 # READER
* 2 # PUNCH
* 3 # BOTH
*
062F 1 074B DC RMASK READER
0630 1 0749 OC XMASK PUNCH
*****
*
0631 0 4480 0160 PTBGN BSI I 8EGIN CALL MONITOR *
```



```
06A6 1 C400 05E0 RTN4 LO L SW1
06A8 0 F0DA EOR SWCMP
06A9 1 4C20 0647 BSC L LOOP,Z BR IF END THIS RTN
06AB 0 4034 BSI XKROY PUNCH REAOY
06AC 0 4049 BSI RRDY READER REAOY
06AD 1 4C00 071B BSC L XFEED PUNCH & CONTROL ROR
*
06AF 1 0C00 0744 RTN4A XIO L XIORR READ ROR BUFFER
06B1 1 C400 081E LO L CAREO PLACE CHAR READ IN
06B3 1 D400 081F STO L XCHAR OUTPUT AREA
06B5 0 10A0 SLT 32
06B6 1 0C00 0740 XIO L XIOSO SENSE DSW
06B8 1 4C10 06A6 BSC L RTN4,- BR IF NO DSW ERRORS
*
06BA 0 6116 LOX 1 /0016 PRINT RDR ERROR
06BB 0 6207 LDX 2 7
06BC 1 4400 0809 BSI L PROSW PRINT THE ERROR
06BE 1 6E00 0819 STX L2 EMESG&2
*
06C0 0 4035 BSI RRDY READER REAOY
06C1 0 704A MOX FEEO CONTROL READER
MOX RTN4
*****
*
* ROUTINE 5 - PUNCH FROM BIT SWITCHES
*
*
06C2 0 6700 0000 RTN5A LDX L3 /0000
06C4 1 0C00 0746 RTN5B XIO L RDBS READ THE BIT SWITCHES
06C6 1 C400 0754 LD L 8ITSW
06C8 0 1300 SLA 3 0
06C9 1 D400 081F STO L XCHAR SAVE NEXT PCH CHAR
06CB 0 C0F7 LD RTN5A&1
06CC 0 4830 BSC -Z
06CD 0 6300 LDX 3 0
06CE 0 4808 BSC &
06CF 0 6308 LDX 3 8
06D0 0 68F2 RTN5D STX 3 RTN5A&1
06D1 1 C400 05E0 LO L SW1
06D3 0 F0AF EOR SWCMP
06D4 1 4C20 0647 BSC L LOOP,Z BR IF END THIS RTN
06D6 0 4009 BSI XKROY CHECK PUNCH REAOY
06D7 0 7057 MOX PUNH PUNCH THE CHARACTER
MDX RTN5A
*****
*
* COUNT CHARACTERS SUBROUTINE
*
*
06D8 0 0000 CRASH DC /0000 IS RTN COMPLETE
06D9 1 74FF 06A3 MOX L WRECK,-1 DECREMENT CHSR CNTR
06D8 0 7002 MDX RASH
*
06DC 1 4C00 0649 BSC L CNTRL BR - END OF RECORD
*
06DE 1 4C80 06D8 RASH BSC I CRASH RET IF RCD NOT CMPLT
*
*****
*
* PUNCH REAOY SUBROUTINE
*
*
06E0 0 0000 XKRDY DC /0000
06E1 0 085E XIO XIOSO SENSE AND SAVE DSW
06E2 0 0070 STO OSWAS
```

30B02740  
30B02750  
30B02760  
30B02770  
30B02780  
30B02790  
30B02800  
30B02810  
30B02820  
30B02830  
30B02840  
30B02850  
30B02860  
30B02870  
30B02880  
30B02890  
30B02900  
30B02910  
30B02920  
30B02930  
30B02940  
30B02950  
30B02960  
30B02970  
30B02980  
30B02990  
30B03000  
30B03010  
30B03020  
30B03030  
30B03040  
30B03050  
30B03060  
30B03070  
30B03080  
30B03090  
30B03100  
30B03110  
30B03120  
30B03130  
30B03140  
30B03150  
30B03160  
30B03170  
30B03180  
30B03190  
30B03200  
30B03210  
30B03220  
30B03230  
30B03240  
30B03250  
30B03260  
30B03270  
30B03280  
30B03290  
30B03300  
30B03310  
30B03320  
30B03330  
30B03340  
30B03350  
30B03360  
30B03370  
30B03380  
30B03390  
30B03400  
30B03410

```
06E3 0 E065 AND XMASK REMOVE RDR NRDY BIT
06E4 1 4C98 06E0 * BSC I XKRDY,&- BR IF DSW OKAY
*
06E6 0 1007 SLA 7 DSW ERROR
06E7 1 4C10 06ED BSC L XKRD2,- BR IF PUNCH REAOY
06E9 1 CC00 08BB LDD L PNRDY SET PUNCH NOT READY
06EB 1 DC00 081A STD L EMESG&3
*
06ED 0 6105 XKRD2 LDX 1 5 ERROR - 5
06EE 0 C864 LOD DSWAS
06EF 0 E05F AND POFF
06F0 0 18D0 RTE 16
06F1 1 4400 0809 BSI L PRDSW PRINT THE ERROR
*
06F3 1 4400 0830 BSI L TIME PAUSE BEFORE RECHECK
06F5 0 70EB MDX XKRDY&1
*****
*
* READER READY SUBROUTINE
*
RRDY DC /0000
XIO XIOSD SENSE AND SAVE DSW
STO DSWAS
*
06F9 0 E04E AND RMASK REMOVE PCH NRDY BIT
*
06FA 1 4C98 06F6 BSC I RRDY,&- BR IF DSW OKAY
*
06FC 0 1005 SLA 5 DSW ERROR
06FD 1 4C10 0703 BSC L RROY2,- BR IF READER REAOY
06FF 1 CC00 0886 LOD L RNROY SET NOT READY MSG
0701 1 0C00 081A STO L EMESG&3
RRDY2 LOX 1 4 ERROR - 4
LOO DSWAS
AND ROFF
RTE 16
BSI L PRDSW PRINT THE ERROR
*
0709 1 4400 0830 BSI L TIME PAUSE BEFORE RECHECK
070B 0 70EB MOX RRDY&1
*****
*
* CONTROL READER SUBROUTINE
*
FEED LDX 1 1 SET READER INTRPT
STX L1 INTX EXPECTED
*
070F 0 0832 XIO XIOFD FEEO READER
*
0710 0 082F XIO XIOSD SAVE BUSY DSW
0711 0 D03F STO OSWBY
0712 1 4400 0788 BSI L BSYES CHECK BUSY DSW
*
0714 1 4400 0830 BSI L TIME PAUSE FOR INTRPT
NO READ INTERPT
*
0716 0 6111 LDX 1 /0011 ERROR - 11
0717 0 C839 LDO DSWBY
0718 0 E035 AND ROFF
0719 0 E831 OR DSWR2
071A 0 705F MOX DINE5 GO PRINT THE ERROR
*****
*
* PUNCH AND CONTROL READER SUBROUTINE
*
071B 1 6500 05FD XFEED LDX L1 DINT1 RESTURE DOUBLE INT
```

30B03420  
30B03430  
30B03440  
30B03450  
30B03460  
30B03470  
30B03480  
30B03490  
30B03500  
30B03510  
30B03520  
30B03530  
30B03540  
30B03550  
30B03560  
30B03570  
30B03580  
30B03590  
30B03600  
30B03610  
30B03620  
30B03630  
30B03640  
30B03650  
30B03660  
30B03670  
30B03680  
30B03690  
30B03700  
30B03710  
30B03720  
30B03730  
30B03740  
30B03750  
30B03760  
30B03770  
30B03780  
30B03790  
30B03800  
30B03810  
30B03820  
30B03830  
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30B03880  
30B03890  
30B03900  
30B03910  
30B03920  
30B03930  
30B03940  
30B03950  
30B03960  
30B03970  
30B03980  
30B03990  
30B04000  
30B04010  
30B04020  
30B04030  
30B04040  
30B04050  
30B04060  
30B04070  
30B04080  
30B04090



071D 1 6D00 05FC STX L1 OINT1-1 SWITCH 30B04100  
\* 30B04110  
071F 0 6103 LOX 1 3 SET DOUBLE INTRPT 30B04120  
0720 1 6D00 062E STX L1 INTEX EXPECTED 30B04130  
\* 30B04140  
0722 0 081B XIO XIOXX FEE0 AND PUNCH 30B04150  
0723 0 081E XIO XIOF0 30B04160  
\* 30B04170  
0724 0 081B XIO XIOSD SAVE BUSY DSW 30B04180  
0725 0 002B STO OSWBY 30B04190  
0726 1 4400 0788 BSI L BSYES CHECK BUST DSW 30B04200  
\* 30B04210  
0728 1 4400 0830 BSI L TIME PAUSE FOR INTERRUPT 30B04220  
\* 30B04230  
072A 0 C026 LO OSWBY LOST INTERPT 30B04240  
072B 0 6113 LDX 1 /0013 ERROR - 13 30B04250  
072C 0 1800 RTE 16 30B04260  
0720 0 C01F LO DSWRX 30B04270  
072E 0 704B MOX DINE5 GO PRINT THE ERROR 30B04280  
\*\*\*\*\* 30B04290  
\* 30B04300  
\* PUNCH SUBROUTINE 30B04310  
\* 30B04320  
072F 0 6102 PUNH LDX 1 2 SET PUNCH INTRPT 30B04330  
0730 1 6D00 062E STX L1 INTEX EXPECTED 30B04340  
\* 30B04350  
0732 0 080B XIO XIOXX PUNCH CHARACTER 30B04360  
\* 30B04370  
0733 0 080C XIO XIOSD SAVE BUSY DSW 30B04380  
0734 0 001C STO OSWBY 30B04390  
0735 1 4400 0788 8SI L BSYES CHECK BUSY OSW 30B04400  
\* 30B04410  
0737 1 4400 0830 BSI L TIME PAUSE FOR INTERRUPT 30B04420  
\* 30B04430  
0739 0 C817 LDD DSWBY NO PUNCH INTERPT 30B04440  
073A 0 6112 LDX 1 /0012 ERROR - 12 30B04450  
073B 0 E013 AND POFF 30B04460  
073C 0 E80F OR DSWX2 30B04470  
073D 0 703C MOX OINE5 30B04480  
\*\*\*\*\* 30B04490  
\* 30B04500  
\* 30B04510  
\* 30B04520  
073E 0000 BSS E 30B04530  
073E 1 081F XIOXX OC XCHAR PUNCH IOCC 30B04540  
073F 0 1900 OC /1900 30B04550  
0740 0 0000 XIOSD OC /0000 SENSE DSW IOCC 30B04560  
0741 0 1F01 OC /1F01 30B04570  
0742 0 0000 XIOFD DC /0000 FEE0 IOCC 30B04580  
0743 0 1C10 OC /1C10 30B04590  
0744 1 081E XIORR OC CARE0 REAO IOCC 30B04600  
0745 0 1A00 DC /1A00 30B04610  
0746 1 0754 ROBS DC BITSW REAO BIT SWITCHES 30B04620  
0747 0 3A00 OC /3A00 30B04630  
0748 0 FFFF RMASK OC /FFFF READER MASK 30B04640  
0749 0 FBFF XMASK OC /FBFF PUNCH MASK 30B04650  
074A 0 FFFF OC /FFFF MINUS ONE 30B04660  
074B 0 0C00 OSWR2 DC /0C00 ROR BUSY EXP OSW 30B04670  
074C 0 0300 DSWX2 OC /0300 PCH BUSY EXP DSW 30B04680  
0740 0 0F00 OSWRX DC /0F00 DOUBLE BUSY OSW EXP 30B04690  
074E 0 0100 ROFF OC /0100 30B04700  
074F 0 0400 POFF DC /0400 30B04710  
0750 0 0000 OC /0000 30B04720  
0751 0 0000 OSWBY OC /0000 LAST BUSY OSW 30B04730  
0752 0 0000 OC /0000 NOT USED 30B04740  
0753 0 0000 OSWAS OC /0000 LAST OSWER PRINTED 30B04750  
0754 0 0000 BITSW OC 30B04760  
\*\*\*\*\* 30B04770  
\*

0755 0 6101 \* 30B04780  
0756 1 6000 0819 SPUR LOX 1 1 30B04790  
0758 0 6120 STX L1 EMESG&2 30B04800  
0759 1 C400 0623 LOX 1 /20 ERROR - 20 30B04810  
075B 1 4400 0809 LO L OSWIT 30B04820  
8SI L PROSW PRINT OSW ERROR 30B04830  
\* SPURIOUS OR NON- 30B04840  
\* RESETABLE INTERRUPT 30B04850  
075D 0 4480 0161 \* BSI I START 30B04860  
\*\*\*\*\* 30B04870  
\* 30B04880  
\* PRINT DSW ERRORS DETECTED 30B04890  
\* DURING INTERRUPT 30B04900  
\* 30B04910  
075F 0 6500 0000 NIPES LOX L1 /0000 PRINT OSW ERROR 30B04920  
\* DETECTED WHILE 30B04930  
\* RUNNING RTN 1 OR 30B04940  
\* RTN 2 30B04950  
0761 1 C000 0623 LOO L DSWIT 30B04960  
0763 1 E500 0740 AND L1 ROFF-1 30B04970  
0765 1 E000 062B OR L1 INTEX-3 30B04980  
0767 0 7105 MDX 1 5 ERROR - 6 OR 7 30B04990  
0768 0 7011 MOX OINE5 30B05000  
\* 30B05010  
\* 30B05020  
0769 1 C400 0623 OINE1 LO L OSWIT PRINT OSW ERROR 30B05030  
\* DETECTED WHILE 30B05040  
\* RUNNING RTN 3 OR 30B05050  
\* RTN 4 30B05060  
076B 0 1800 RTE 16 30B05070  
076C 0 610B LOX 1 8 ERROR - 8 30B05080  
0760 0 700A MDX OINE4 30B05090  
\* 30B05100  
076E 1 C400 0623 OINE2 LD L OSWIT SEQ SVC REQ ERROR 30B05110  
0770 0 1800 RTE 16 30B05120  
0771 1 C400 0624 LD L 8UMRQ 30B05130  
0773 1 4C20 0777 BSC L OINE3,2 BR IF 1ST SVC REQ OK 30B05140  
0775 0 6109 LOX 1 9 ERROR - 9 30B05150  
0776 0 7001 MOX OINE4 30B05160  
\* 30B05170  
0777 0 6110 OINE3 LOX 1 /0010 ERROR - 10 30B05180  
077B 1 C400 062B OINE4 LD L INTE0 30B05190  
077A 0 1B00 DINE5 RTE 16 30B05200  
077B 1 4400 0809 BSI L PROSW PRINT THE ERROR 30B05210  
\* 30B05220  
0770 0 1010 DINE6 SLA 16 INTRPT RECEIVED 30B05230  
077E 1 0400 05E7 STO L MLSCF&2 BLOCK TIMER RETURN 30B05240  
0780 1 6580 05DD LOX 11 R10 RET TO MAINLINE RTN 30B05250  
0782 0 C063 LO ERRET 30B05260  
0783 1 4D98 087E 8SC 11 SORTS-1,&- BR IF NO ERROR LAST 30B05270  
\* 30B05280  
0785 0 1810 SRA 16 RETURN TO FINISH 30B05290  
0786 0 D05F STO ERRET ALIGNING TAPE 30B05300  
0787 0 7014 MOX REAO IN READER 30B05310  
\*\*\*\*\* 30B05320  
\* 30B05330  
\* CHECK BUSY OSW 30B05340  
\* 30B05350  
0788 0 0000 BSYES OC /0000 30B05360  
0789 1 6D00 0760 STX L1 NIPES&1 FETCH LAST OSW SENSED 30B05370  
078B 0 C0C5 LO DSWBY AFTER I/O COMMAND 30B05380  
078C 1 E500 0747 AND L1 RMASK-1 30B05390  
078E 1 F500 074A EOR L1 OSWR2-1 30B05400  
0790 1 4C98 0788 8SC I BSYES,&- BR IF OSW OK 30B05410  
\* 30B05420  
0792 0 C88E LOO DSWBY PRINT DSW ERROR 30B05430  
0793 1 E500 074D AND L1 ROFF-1 30B05440  
0795 1 E000 074A OR L1 OSWR2-1 ERROR - 1 OR 2 OR 3 30B05450



0797 0 18DD RTE 16  
D798 0 4070 BSI PRDSW PRINT THE ERROR  
  
D799 1 4C80 0788 XBSYX BSC I BSYES EXIT TO USER  
  
\*\*\*\*\*  
\*  
\* READ AND COMPARE SUBROUTINE  
\*  
\* THIS ROUTINE READS THE READER BUFFER TWICE  
\* TO ENSURE THE SAME DATA IS READ. THEN IT  
\* COMPARES THE DATA READ WITH WHAT SHOULD HAVE  
\* BEEN READ. IF AN ERROR IS FOUND THIS ROUTINE  
\* WILL REALIGN THE TAPE IN THE READER BEFORE  
\* RETURNING TO MAINLINE ROUTINE IF THAT OPTION  
\* WAS SPECIFIED. OTHERWISE ONE ERROR IS PRINTED  
\* FOR EACH NON-COMPARE.  
\*  
\* AN ERRDR WILL ALSO BE PRINTED IF THE ROUTINE  
\* CANNOT REALIGN THE TAPE IN 100 CHARACTERS.  
\*  
\*  
\* RDIT DC /00DD  
\* READ LD L CARED SAVE LAST CHAR READ  
\* STO L LREAD  
\* XIO XIDRR READ CHARACTER  
\*  
\* LD L CARED SAVE CHARACTER READ  
\* STO SAVIT  
\*  
\* XIO XIDRR READ  
\* LD SAVIT CHECK IF SAME CHAR  
\* EOR CARED  
\* BSC L RDIT1,Z BR IF ERR IN READ  
\*  
\* RDITD LD L XCHAR DO CHARACTERS  
\* EOR CARED COMPARE  
\* SRA 8  
\* BSC L RDIT2,Z BR IF NON COMPARE  
\* MDX L CORCT,1  
\* MDX RDITE EXIT  
\*  
\* STX 0 N1ST  
\* LDX L1 /A001 PRINT TAPE ALIGNED  
\* LDD L TEAL  
\* BSI PTLOG PRINT THE MESSAGE  
\* LO L SW2 TURN OFF REALIGN SW  
\* SLA 9  
\* SRA 9  
\* STO L SW2  
\* SRA 16 RESET BITLINE CHECK  
\* STO BTLNE  
\* LO KFF00  
\* STO NOLNE  
\* LDX 1 100  
\* STX 1 TRIAL  
\* MDX RDITE EXIT  
\*  
\* RDIT1 LD SAVIT CONSECUTIVE READ ERROR  
\* RTE 16  
\* LD CARED  
\* LDX 1 /18  
\* BSI L PRDSW ERROR - 18  
\* MDX RDITO PRINT THE ERROR

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30805560  
30805570  
30805580  
30805590  
30805600  
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30805680  
30805690  
30805700  
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30805990  
30806000  
30806010  
30806020  
30806030  
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30806070  
30806080  
30806090  
30806100  
30806110  
30806120  
30806130

07CC 0 CD1B  
07CD 1 4C2D 07EE  
  
07CF 0 CD1B  
07D0 0 E84D  
07D1 0 D019  
  
0702 0 C017  
07D3 D ED4A  
07D4 0 D015  
  
07D5 1 74FF 07EC  
07D7 0 7007  
  
07D8 D C011  
07D9 D 6119  
07DA D 18DD  
07DB 0 C0DF  
07DC 1 4400 0809  
  
D70E 0 70DF  
  
070F D 61F8  
07E0 0 6906  
07E1 1 4400 06F6  
07E3 0 6802  
07E4 1 4CDD 070C  
  
07E6 0 0000  
07E7 0 0000  
07E8 0 0000  
07E9 0 0000  
07EA 0 FF00  
07EB 0 0000  
07EC D 0064  
07ED 0 FF00  
  
07EE 1 C400 05E1  
07F0 0 1008  
07F1 1 4C10 07F6  
07F3 0 1008  
07F4 0 D0F3  
07F5 0 70E9  
  
07F6 0 6114  
07F7 1 CC00 0884  
07F9 0 D820  
07FA 0 C025  
07FB 0 F023  
07FC 1 4C18 0802  
07FE 0 C01F  
07FF 0 F021  
0800 0 4818  
0801 0 6115  
0802 0 C01C  
0803 0 189B  
0804 0 1088  
0805 0 C018  
0806 0 4002  
  
0807 1 4C80 079B  
  
0809 0 00D0  
  
\* RDIT2 LD N1ST  
\* BSC L RDIT4,Z BR IF TAPE ALIGNEO  
\*  
\* LD BTLNE  
\* OR CARED  
\* STO BTLNE  
\*  
\* LD NOLNE  
\* AND CARED  
\* STO NOLNE  
\*  
\* MDX L TRIAL,-1  
\* MDX RDIT3 COUNT DOWN 100 MAX  
\*  
\* LD NOLNE  
\* LDX 1 /D019  
\* RTE 16  
\* LD BTLNE  
\* BSI L PRDSW ND ALIGNMENT ERRDR  
\* ERRDR - 19  
\*  
\* MDX RDITD  
\*  
\* RDIT3 LDX 1 -8  
\* STX 1 CORCT  
\* BSI L RRDY  
\* STX D ERRET  
\* BSC L FEED  
\*  
\* ERRET DC /0DD0  
\* CDRCT DC /0DD0  
\* N1ST DC /0000  
\* SAVIT DC /0DD0  
\* NOLNE DC /FF00  
\* BTLNE DC /0000  
\* TRIAL DC 100  
\* KFF00 DC /FF00  
\*  
\* RDIT4 LD L SW2  
\* SLA 8  
\* BSC L RDIT6,- BR IF NO REALIGN  
\* SLA 8  
\* STO N1ST  
\* MDX RDIT3  
\*  
\* RDIT6 LDX 1 /0014  
\* LDD L WASSB  
\* STD EMESG&3  
\* LO LCHAR  
\* EOR XCHAR  
\* BSC L RDIT5,&- BR IF BUF S/NB CNGD  
\* LO CARED  
\* EOR LREAD  
\* BSC &-  
\* LOX 1 /0015  
\* RDIT5 LD XCHAR  
\* SRT 24  
\* SLT 8  
\* LD CARED  
\* BSI PROSW  
\*  
\* ROITE BSC I RDIT  
\*\*\*\*\*  
\*  
\* PRINT ERROR SUBROUTINE  
\*  
\* PROSW DC /0000 PRINT ERROR RTN

30806140  
30806150  
30806160  
30806170  
30806180  
30806190  
30806200  
30806210  
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30806250  
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30806290  
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30806370  
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30806390  
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30806690  
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30806770  
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30806790  
30806800  
30806810

```
*
080A 0 0811          STD      EMESG&5      SAVE DATA WAS & S/B
*
080B 0 690B          STX      1 EMESG        SAVE MESSAGE ID NO
*****
080C 0 4480 0162     BSI      I ERROR
080E 1 0817          DC       EMESG         MESSAGE ADDR
080F 0 0000          OC       LOOP ON ERR ADDR
*****
0810 0 6203          LDX      2 3
0811 0 6A07          STX      2 EMESG&2
0812 0 10A0          SLT      32            CLEAR ALPHA MESS
0813 0 0806          STD      EMESG&3
0814 1 6480 0809     LOX      IO PROSW       NORMAL & LOOP RETS
*
0816      0000          BSS      E
0816 0 1000          TIMEX    OC /1000        COUNTER
0817 0 0000          EMESG    OC /0000        MESSAGE ID
0818 0 0000          DC       /0000        HEX OUTPUT
0819 0 0003          DC       /0003        WORD COUNT
081A 0 0000          DC       /0000        ALPHA AORS
081B 0 0000          OC       /0000        ALPHA ADRS
081C 0 0000          OC       /0000        DSWAS
081D 0 0000          DC       /0000        DSW S/B
*
*
081E 0 0000          CARED    OC /0000        CHARACTER READ
081F 0 0000          XCHAR    OC /0000        PUNCH OUTPUT CHAR
0820 0 0000          LCHAR    OC /0000        PREVIOUS OUTPUT CHAR
0821 0 0000          LREAD    OC /0000        PREVIOUS CHAR REAO
*****
*
*
*
LOG MESSAGE SUBROUTINE
*
0822 0 0000          PTLOG    OC /0000
0823 0 6907          STX      1 LGMS        SAVE MESSAGE ID
*
0824 0 0809          STO      LGMS&3        SAVE MODIFIERS
*****
0825 0 4480 0163     BSI      I LOG
0827 1 082B          OC       LGMS         ADDR OF MESSAGE
*****
082B 1 6480 0822     LOX      IO PTLOG       NORMAL RETURN
*
082A      0001          BSS      E 1
082B 0 0001          LGMS     OC 1           MSG IO
082C 0 0000          OC       /0000        HEX OUTPUT
082D 0 0000          DC       /0000        DATA ID
082E 0 0000          DC       /0000
082F 0 0000          DC       /0000
*****
*
*
TIMED DELAY SUBROUTINE
*
0830 0 0000          TIME     DC /0000
0831 0 6500 1000     LOX      L1 /1000        SET UP COUNTER
0833 0 69E2          STX      1 TIMEX
0834 1 74FF 0816     MOX      L TIMEX,-1      DECREMENT COUNTER
0836 0 7002          MOX      TIME1
0837 1 4C80 0830     BSC      I TIME         EXIT TIME UP
*
0839 1 650D 0834     TIME1    LDX L1 TIME&4      SET FOR REENTRY
083B 1 6000 05E7     POSWX    STX L1 MLSCF&2
0830 0 4480 0161     BSI      I START
*****
*
*
BUILD NEXT CHARACTER
```

30806820  
30806830  
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30806880  
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30806930  
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30806950  
30806960  
30806970  
30806980  
30806990  
30807000  
30807010  
30807020  
30807030  
30807040  
30807050  
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30807070  
30807080  
30807090  
30807100  
30807110  
30807120  
30807130  
30807140  
30807150  
30807160  
30807170  
30807180  
30807190  
30807200  
30807210  
30807220  
30807230  
30807240  
30807250  
30807260  
30807270  
30807280  
30807290  
30807300  
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30807390  
30807400  
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30807490

				SUBROUTINE				
				*				
				*				
083F	0	0000		MARK	DC	/0000		
0840	0	C00E			LD	XCHAR	SAVE LAST CHARACTER	
0841	0	1808			SRA	8		
0842	0	1008			SLA	8		
0843	0	D0DC			STO	LCHAR		
				*				
0844	0	6500	0001		LDX	L1 1	INIT TEST XR1	
0846	0	6600	0000		LDX	L2 0	XR2	
084B	1	4E80	0870	OULP	BSC	I2 WHAT	GO BUILD CHARACTER	
				*				
084A	1	C500	0874	NRIPX	LD	L1 BITSX	START NEW RIPPLE	
084C	0	0002			STO	XCHAR	PATTERN	
0840	0	6201			LDX	2 1		
084E	0	7010			MOX	EXITX		
				*				
084F	0	C0CF		SRIPX	LO	XCHAR	SHIFT RIPPLE PATTERN	
0850	0	1001			SLA	1		
0851	0	D0C0			STO	XCHAR		
0852	0	4820			BSC	Z	SKIP NEXT CH NO BITS	
0853	0	7018			MDX	EXITX		
0854	0	6202			LDX	2 2		
0855	0	C01E			LD	BITSX	PLACE ALL BIT CHAR	
0856	0	00C8			STO	XCHAR		
0857	0	6925			STX	1 COUNX		
				*				
0858	1	74FF	0870	BARX	MOX	L COUNX,-1	SKIP WHEN COUNX GO 0	
085A	0	7D11			MDX	EXITX		
085B	0	6200			LDX	2 0		
085C	0	7101			MDX	1 1		
0850	0	6920			STX	1 KOUNX		
085E	1	74F8	087E		MOX	L KOUNX,-B	SKIP EXCEPT END RIPPLE	
0860	0	7001			MDX	ENRIX	BR TO END RIPPLE ROUT	
0861	0	700A			MOX	EXITX	BR TO EXIT	
				*				
0862	0	6203		ENRIX	LDX	2 3	END RIPPLE PATTERN	
0863	0	7008			MDX	EXITX		
				*				
0864	0	C018		ALLBX	LD	COUNX	ALL CHARS PATTERN	
0865	0	00B9			STO	XCHAR		
0866	0	800E			A	ONEEX	ADD ONE I. E. 0100	
0867	0	0015			STO	COUNX		
0868	1	4C20	086C		BSC	L EXITX,Z		
				*				
				*				
086A	0	6101			LDX	1 1	REINITIALIZE	
086B	0	6200			LOX	2 0		
086C	0	690B		EXITX	STX	1 DULP-1		
0860	0	6A09			STX	2 OULP&1		
086E	1	4C80	083F		BSC	I MARK	EXIT	
				*				
*****								
				*				
0870	1	084A		WHAT	OC	NRIPX	RECORD CONTROL AORS	
0871	1	084F			DC	SRIPX		
0872	1	085B			OC	BARX		
0873	1	D864			OC	ALLBX		
				*				
				*				
0874	0	FF00		BITSX	OC	/FF00	CHARACTER PATTERN	
0875	0	0100		ONEEX	OC	/0100	CONSTANTS	
0876	0	00C0			OC	/00C0		
0877	0	00E0			DC	/00ED		
0878	0	00F0			OC	/00F0		
0879	0	00F8			OC	/00F8		
087A	0	00FC			DC	/00FC		
087B	0	00FE			OC	/00FE		

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30808150  
30808160  
30808170

```
087C 0 00FF          OC      /00FF
087D 0 0000          COUNX OC      /0000      WORK AREAS
087E 0 0000          KOUNX DC      /0000
*****
*
*
*      ADDRESSES FOR RETURN TO
*      MAINLINE AFTER INTRPT
*
087F 1 068F          SORTS OC      RTN1A      ROUTINE 1
0880 1 0695          DC          RTN2A      ROUTINE 2
0881 1 069F          DC          RTN3A      ROUTINE 3
0882 1 06AF          OC          RTN4A      ROUTINE 4
0883 1 06C2          OC          RTN5A      ROUTINE 5
*****
*
*      ALPHABETIC MESSAGE
*      STORAGE AREAS
*
0884 0000          BSS  E
0884 1 0899          WASS8 DC      AWAS
0885 1 089C          DC          ASB
0886 1 088C          RNRDY DC      ARDR
0887 1 08A5          DC          ANRDY
0888 1 088F          PNRDY DC      APCH
0889 1 08A5          DC          ANRDY
088A 0 0000          TEAL  DC      0
088B 1 0892          DC          ATAPE
*
088C 0 6232          ARDR  DC      /6232      RDR ERROR
088D 0 6200          DC          /6200
088E 0 FFFF          DC          /FFFF
*
088F 0 561E          APCH  DC      /561E      PCH
0890 0 2600          DC          /2600
0891 0 FFFF          DC          /FFFF
*
0892 0 9C3C          ATAPE DC      /9C3C      TAPE ALIGNED
0893 0 5434          DC          /5434
0894 0 213C          DC          /213C
0895 0 5C20          DC          /5C20
0896 0 1474          DC          /1474
0897 0 3430          DC          /3430
0898 0 FFFF          DC          /FFFF
*
0899 0 923E          AWAS  DC      /923E      WAS
089A 0 9A00          DC          /9A00
089B 0 FFFF          DC          /FFFF
*
089C 0 219A          ASB   DC      /219A      S/B - DATA ERROR
089D 0 8C1A          DC          /8C1A
089E 0 2184          DC          /2184
089F 0 2132          DC          /2132
08A0 0 3E9E          DC          /3E9E
08A1 0 3E21          DC          /3E21
08A2 0 3662          DC          /3662
08A3 0 6200          DC          /6200
08A4 0 FFFF          DC          /FFFF
08A5 0 7662          ANRDY DC      /7662      NRDY
08A6 0 32A6          DC          /32A6
08A7 0 FFFF          DC          /FFFF
*
08A8 0631          END      PTBGN
NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

30808180  
30808190  
30808200  
30808210  
30808220  
30808230  
30808240  
30808250  
30808260  
30808270  
30808280  
30808290  
30808300  
30808310  
30808320  
30808330  
30808340  
30808350  
30808360  
30808370  
30808380  
30808390  
30808400  
30808410  
30808420  
30808430  
30808440  
30808450  
30808460  
30808470  
30808480  
30808490  
30808500  
30808510  
30808520  
30808530  
30808540  
30808550  
30808560  
30808570  
30808580  
30808590  
30808600  
30808610  
30808620  
30808630  
30808640  
30808650  
30808660  
30808670  
30808680  
30808690  
30808700  
30808710  
30808720  
30808730  
30808740  
30808750  
30808760  
30808770  
30808780  
30808790  
30808800  
30808810

```
C R O S S   R E F E R E N C E
NAME  VALUE  REFERENCES
ALLBX 0864  0873
ANRDY 08A5  0887,0889
APCH   088F  0888
AROR   088C  0886
ASB    089C  0885
ATAPE  0892  0888
AWAS   0899  0884
BARX   0858  0872
BEGIN  0160  0631
BITSW  0754  06C6,0746
BITSX  0874  084A,0855
BSYES  0788  0712,0726,0735,0790,0799
BTLE   07EB  07BF,07CF,07D1,07DB
BUMRQ  0624  0612,0771
CARED  081E  06B1,0744,079C,07A1,07A6,07A8,07C7,07D0,0703,07FE,0805
CNTRL  0649  06DC
CN10   064E
CN20   0658  064C
CN25   065F  0651
CN30   066E  0665,066B
CORCT  07E7  0635,07AF,07E0
COUNX  087D  0857,0858,0864,0867
CRASH  06D8  068F,0697,06A1,06DE
DINE1  0769  0605
DINE2  076E  0600
DINE3  0777  0773
DINE4  0778  076D,0776
DINE5  077A  071A,072E,073D,0768
DINE6  077D  061C
DINT   05FA  0628
DINT1  05FD  0615,071B,071D
DINT2  0608  0613
DINT4  0610  0600
DSWAS  0753  06E2,06EE,06F8,0704
DSWBY  0751  0711,0717,0725,072A,0734,0739,078B,0792
DSWDI  0629  05FD,0602
DSWID  062A  05FF,0608
DSWIT  0623  05EC,0609,0759,0761,0769,076E
DSWRX  074D  072D
DSWR2  074B  0719,078E,0795
DSWX2  074C  073C
DULP   0846  0671,0674,086C,086D
EINT   0617  0625
EMESG  0817  063D,06BE,06EB,0701,0756,07F9,080A,080B,080E,0811,0813
END     0164  065D
ENRIX  0862  0860
ERLCK  0166
ERRET  07E6  0782,0786,07E3
ERROR  0162  080C
EXITX  086C  084E,0853,085A,0861,0863,0868
FEED   070C  0694,06A5,06C1,07E4
HANDL  0626  05EF
ILO     017A
IL1     018A
IL2     019A
IL3     01AA
IL4     01BA  0645
INTED  062B  05FA,05FE,060A,0778
INTEX  062E  05ED,05F1,05F3,0620,070D,0720,0730,0765
KFF00  07ED  07C0
KOUNX  087E  085D,085E
LCHAR  0820  07FA,0843
LGMS   082B  0823,0824,0827
LOG     0163  0825
LOGBY  0167
LOOP   0647  05E3,06A9,06D4
```

LREAO 0821 079E,07FF  
LRTN 0682 067D  
MARK 083F 068A,0691,0699,086E  
MLSCF 05E5 0619,061E,0667,077E,083B  
NIPES 075F 05F7,0789  
NOLNE 07EA 07C1,0702,0704,0708  
NRIPX 084A 0870  
NRTN 0680 067C  
NIST 07E8 063A,07B2,07CC,07F4  
ONEEX 0875 0866  
POSWX 083B  
PIO 05DC 0633  
PINT1 061E 05F9,0607,060F  
PINT3 061C 05F5,0603,060B  
PNROY 0888 06E9  
POFF 074F 06EF,073B  
POINT 05E9 0621,0643  
PROSW 0809 068C,06F1,0707,075B,0778,0798,07C9,070C,0806,0814  
PTBGN 0631 08A8  
PTLOG 0822 0787,0828  
PUNH 072F 0680,0607  
RAD 050E 0663  
RASH 060E 060B  
ROBS 0746 06C4  
ROIT 079B 0695,069F,0807  
ROITO 078E 070E  
ROITE 0807 07B1,07C4  
ROITO 07A9 07CB  
ROIT1 07C5 07A7  
ROIT2 07CC 07A0  
ROIT3 07DF 0707,07F5  
ROIT4 07EE 07C0  
ROIT5 0802 07FC  
ROIT6 07F6 07F1  
REAO 079C 0787  
RESRT 0634 05E4,05E6  
RID 05DD 0648,064E,0656,0658,065B,065F,0780  
RIDCK 0670 0650  
RLCM 0168  
RMASK 0748 062F,06F9,078C  
RNRDY 0886 06FF  
ROFF 074E 0705,0718,0763,0793  
RQKB 01BC  
RQTY 01BB  
RROY 06F6 0693,069C,06A4,06AC,06C0,06FA,070B,07E1  
RRDY2 0703 06FD  
RTNOM 067C 065A  
RTNSW 0165 0669  
RTN1 068A 0690  
RTN1A 068F 087F  
RTN1I 0684 0641,067E,0689  
RTN2 0691 067F,0698  
RTN2A 0695 0880  
RTN3 0699 0680,06A2  
RTN3A 069F 0881  
RTN4 06A6 06B8  
RTN4A 06AF 0882  
RTN4I 06A4 0681  
RTN5A 06C2 0682,06CB,0600,0883  
RTN5B 06C4  
RTN5D 0600  
RTTBL 067E 0661,067A,067C,067D  
SAVIT 07E9 07A3,07A5,07C5  
SINT 05F1 0626,0627  
SORTS 087F 0783  
SPUR 0755 0617  
SRIPX 084F 0871  
START 0161 066C,0750,0830

SVKB 01BD  
SWCMP 0683 0648,06A8,06D3  
SWO 050F  
SW1 05E0 0649,0654,06A6,0601  
SW2 05E1 0637,0788,07BC,07EE  
SW3 05E2  
TEAL 088A 0785  
TERM 05E8  
TIME 0830 06F3,0709,0714,0728,0737,0837,0839  
TIMEX 0816 0833,0834  
TIME1 0839 0836  
TRIAL 07EC 07C3,07D5  
WASSB 0884 07F7  
WHAT 0870 0848  
WRECK 06A3 0678,0686,0609  
XBSYX 0799  
XCHAR 081F 06B3,06C9,073E,07A9,07FB,0802,0840,084C,084F,0851,0856,0865  
XFEED 0718 0690,06A0  
XIOFO 0742 070F,0723  
XIORR 0744 06AF,07A0,07A4  
XIOSD 0740 05EA,06B6,06E1,06F7,0710,0724,0733  
XIOXX 073E 0722,0732  
XIT 0621 0616,061B  
XKRDY 06E0 068C,069B,06AB,0606,06E4,06F5  
XKR2 06E0 06E7  
XMASK 0749 0630,06E3

END OF ASSEMBLY

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1. PURPOSE

THE 1130 RELOCATING DIAGNOSTIC LOADER IS USED TO LOAD THE DIAGNOSTIC MONITOR AND PROGRAMS WHICH RUN UNDER CONTROL OF THE MONITOR. THE LOADER ALSO LOADS NON-MONITOR PROGRAMS WHOSE TAPES ARE IN THE PROPER FORMAT. (THE 1130 RELOCATING DIAGNOSTIC LOADER WILL NOT LOAD PROGRAMS WHOSE OBJECT IS COMPATIBLE WITH THE 1130 BASIC DIAGNOSTIC LOADER).

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES.

THIS LOADER USES THE FIRST 340 WORDS OF STORAGE.

2.2 EQUIPMENT PREREQUISITES

- A. 1130 CPU
- B. 1134 TAPE READER

3. USE PROCEDURE

3.1\*\*\* LOADING AND OPERATING

THE 1130 RELOCATING LOADER, TAPE VERSION, IS SUPPLIED AS ONE IPL RECORD AT THE FRONT OF THE TAPE VERSION MONITOR, AND AS A SEPARATE IPL TAPE. THIS LOADER WILL LOAD ANY TAPE PRODUCED IN THE SAME FORMAT AS THE MONITOR TAPE.

3.1.1 TO LOAD THE MONITOR.

- A. PLACE THE MONITOR TAPE WITH LOADER IN THE TAPE READER.
- B. PRESS RESET, PROGRAM LOAD. WHEN THE LOADER IS IN CORE A WAIT /30F6 WILL OCCUR.
- C. PRESS START.
- D. MONITOR WILL LOAD AND LOOP IN ITS SUPERVISOR ROUTINE

TO LOAD A MONITOR PROGRAM.

- A. PLACE PROGRAM TAPE IN THE READER.
- B. SET CONSOLE SWITCHES TO 8080 (FUNCTION 2 LOAD CALL. SEE MONITOR DOCUMENTATION)
- C. PRESS INTERRUPT REQUEST KEY.
- D. PROGRAM WILL LOAD.

SUBSEQUENT PROGRAMS MAY BE LOADED IN SIMILAR FASHION. FOR OVERLAP LOADING, USE SWITCH SETTING 80CD.

3.1.2 TO LOAD A NON-MONITOR OR STANDALONE PROGRAM.

- A. PLACE THE LOADER IN THE READER AND MAKE READY.
- B. PRESS RESET, PROGRAM LOAD. WHEN THE LOADER IS IN CORE A WAIT /30F6 WILL OCCUR.
- C. AT WAIT /30F6 PLACE THE DESIRED PROGRAM IN THE READER AND MAKE READY.
- D. PRESS START.

3.2\*\*\* WAITS

HALT NO. (B REG)	DESCRIPTION	RESTART ACTION
30F1	CHECK SUM ERROR ON LOADER.	RELOAD OR TO IGNORE PUSH START.
30F2	READER DSW ERROR WHEN LOADING LOADER	RELOAD
30F4	CANNOT CLEAR CORE - DUE TO ERROR IN ADDRESSING UPPER CORE.	
30F6	LOADER IS NOW IN CORE	LOAD DIAGNOSTIC PROGRAM IN READER AND MAKE READY.
30F7	CHECK SUM WHEN LOADING PROGRAM.	RELOAD
30FB	READER NOT READY	MAKE READER READY
30F9	INVALID INTERRUPT WHICH WILL NOT RESET	PRESS RESET AND START

4. PRINTOUTS (NONE)  
5. COMMENTS

5.1\*\*\* THE FOLLOWING ARE THE MAJOR ELEMENTS OF THE 1130 RELOCATABLE  
DIAGNOSTIC LOADER-

- 5.1.1 READ ROUTINE -- CHECKS READER FOR PROPER STATUS, READS A CARD IMAGE INTO LOCATION /0028 THROUGH /0078, CHECKS FOR SATISFACTORY COMPLETION OF THE READ OPERATION, AND DETERMINES WHETHER THE CARD READ IS A BINARY CARD OR A HEXADECIMAL (CORRECTION CARD).
- 5.1.2 BINARY PACK ROUTINE -- TAKES DATA FOUND IN LOCATIONS /0028 THROUGH /0078 (12 BITS PER CORE WORD) AND PACKS IT INTO LOCATION /0028 THROUGH /0050 (16 BITS PER CORE WORD).
- 5.1.3 CHECKSUM ROUTINE -- COMPUTES CHECKSUM OF A BINARY CARD IMAGE WAITS IF CHECKSUM IS IN ERROR.
- 5.1.4 MOVE ROUTINE -- MOVES DATA FROM /0028 THROUGH /0050 TO PROPER CORE LOCATION. CHECKS FOR EXCEEDING CORE SIZE. ADDS IN RELOCATION FACTOR WHEN REQUIRED.
- 5.1.5 RELOCATABLE HEADER ROUTINE -- ENTERED WHEN A RELOCATABLE HEADER CARD IMAGE IS FOUND. COMPUTES A RELOCATION FACTOR FOR PROGRAM THAT FOLLOWS.
- 5.1.6 ABSOLUTE HEADER ROUTINE -- ENTERED WHEN AN ABSOLUTE HEADER CARD IMAGE IS FOUND. SETS RELOCATION FACTOR TO ZERO.
- 5.1.7 TRANSFER ROUTINE -- ENTERED WHEN A TRANSFER CARD IMAGE IS FOUND. COMPUTES THE NEXT LOCATION AVAILABLE FOR LOADING IF ANOTHER PROGRAM FOLLOWS. TRANSFERS CONTROL TO THE LOCATION SPECIFIED ON THE TRANSFER CARD.
- 5.1.8 HEX TO BINARY CONVERSION ROUTINE -- CONVERTS A HEXADECIMAL CARD IMAGE TO BINARY. ADDS IN RELOCATION FACTOR IF REQUIRED.

5.2\*\*\* CARD RECOGNITION

THE FOLLOWING ARE CARD IMAGES WHICH CAN BE LOADED BY THE 1130  
RELOCATABLE DIAGNOSTIC LOADER.

- 5.2.1 ABSOLUTE HEADER CARD HAVE A 1 PUNCH IN COLUMN 4.
- 5.2.2 RELOCATABLE HEADER CARD HAVE A 0 (ZERO) PUNCH IN COLUMN 4.
- 5.2.3 NORMAL DATA CARDS HAVE NO PUNCHES IN ROW 12 IN COLUMN 1. AN ADDRESS IN ROWS 11 THROUGH 9 IN COLUMN 1 AND ROWS 12 THROUGH 1 IN COLUMN 2. A CHECKSUM IN ROWS 2 THROUGH 9 OF COLUMN 2 AND ROWS 12 THROUGH 5 OF COLUMN 3. A 12, 0 PUNCH IN COLUMN 4, A WORD COUNT IN ROWS 4 THROUGH 9 OF COLUMN 4. A RELOCATION FIELD (WHICH MAY BE BLANK) IN COLUMN 5 THROUGH 12. DATA IN COLUMNS 13 THROUGH 72. A SEQUENCE NUMBER IN COLUMNS 73-80.
- 5.2.4 BINARY TRANSFER CARDS HAVE 12, 11, 0, 1 PUNCHES IN COLUMN 4 AND A WORD COUNT OF ZERO (NO PUNCHES IN ROWS 4 THROUGH 9 IN COLUMN 4).
- 5.2.5 HEXADECIMAL TRANSFER CARDS HAVE A 12 PUNCH IN COLUMN 1, A TRANSFER ADDRESS IN COLUMN 2 THROUGH 5 AND NO PUNCHES IN COLUMNS 6 AND 7.
- 5.2.6 HEXADECIMAL CORRECTION CARDS HAVE A 12 PUNCH IN COLUMN 1. AN ADDRESS IN COLUMN 2 THROUGH 5. DATA IN COLUMNS 6 THROUGH 80. DATA IS GROUPED 5 COLUMNS TO ONE CORE WORD. THE FIRST COLUMN OF EACH GROUP SPECIFIES WHETHER OR NOT THE GROUP REQUIRES A RELOCATION FACTOR. IF THE FIRST COLUMN OF A GROUP IS BLANK A RELOCATION FACTOR WILL NOT BE ADDED. IF THE FIRST COLUMN OF A GROUP CONTAINS AN R (11,9 PUNCH) A RELOCATION FACTOR WILL BE ADDED TO THE FIELD. LOADING OF THE CARD IS TERMINATED BY TWO SEQUENTIAL BLANK COLUMNS.

6. APPENDIX (NONE)

----- LAST PAGE -----

```
0000      ABS      3AC00020
          ORG      0      3AC00030
          *      3AC00040
          MDX      STRT 3AC00050
          OC      /0160 LAST ADDR. OF LDA0ER 3AC00060
          DC      0      3AC00070
          DC      0      3AC00080
          DC      0      3AC00090
          OC      0      3AC00100
          DC      0      3AC00110
          OC      0      3AC00120
          DC      0      3AC00130
          OC      0      3AC00140
          DC      0      3AC00150
          DC      0      3AC00160
          DC      INTE 3AC00170
          OC      0      3AC00180
          DC      0      3AC00190
          DC      0      3AC00200
          OC      0      3AC00210
          DC      0      3AC00220
          STRT SLA 16 CLEAR ACC. 3AC00230
          CSADD A 1 0 A00 DATA WORD 3AC00240
          MOX 1 -1 DEC ADDRESSER 3AC00250
          MDX CSADO RETURN ADDRESS NOT ZERO 3AC00260
          *      3AC00270
          A 1 0 A00 LAST WORD TO CKSUM 3AC00280
          8SC L CORE,+- BR IF CHECK SUM=0 3AC00290
          *      3AC00300
          WAIT -15 CHECK SUM ERROR WAIT 3AC00310
          MDX CDRE CONTINUE 3AC00320
          *      3AC00330
          CHKSM DC /F82D INITIAL CHECK SUM 3AC00340
          *      3AC00350
          DC 0 3AC00360
          DC 0 3AC00370
          OC 0 3AC00380
          DC 0 3AC00390
          OC 0 3AC00400
          DC 0 3AC00410
          DC 0 3AC00420
          DC 0 3AC00430
          OC 0 3AC00440
          OC 0 3AC00450
          OC 0 3AC00460
          OC 0 3AC00470
          *      3AC00480
          CORE STX L /7FFF 3AC00490
          LOX L1 INTE INTERRUPT TR VECTOR 3AC00500
          STX L1 /C 3AC00510
          LOX L3 NL0C SET CLEAR CORE INDEXER 3AC00520
          CORE2 MOX 3 2 3AC00530
          SLT 32 3AC00540
          STO 3 2 3AC00550
          MOX L /0000,0 SKIP IF ZERO CLEAREO 3AC00560
          MDX CORE2 3AC00570
          LD L /7FFF CK IF LAST AOR CLEAREO 3AC00580
          8SC L CORE3,&- BR IF CLEAREO 3AC00590
          STX L3 ULIM FETCH THE LAST AOR 3AC00600
          LO L ULIM A # BIT THAT FAILED 3AC00610
          W30F4 WAIT -12 CAN NOT CLEAR CORE 3AC00620
          *      3AC00630
          CORE3 STX L3 ULIM ADDRESSING BIT FAILED 3AC00640
          WAIT -10 SET THE CORE SIZE 3AC00650
          *      3AC00660
          MDX R0C0 * IN READER 3AC00670
          OC 0 GO LOAD PROGRAM 3AC00680
          DC 0 3AC00690
          0042 0 7038
          0043 0 0000
          0044 0 0000
```

```
0045 0 0000 DC 0 3AC00700
0046 0 0000 DC 0 3AC00710
0047 0 0000 DC 0 3AC00720
0048 0 0000 DC 0 3AC00730
0049 0 0000 OC 0 3AC00740
004A 0 0000 OC 0 3AC00750
0048 0 0000 DC 0 3AC00760
004C 0 0000 DC 0 3AC00770
0040 0 0000 DC 0 3AC00780
004E 0 0000 DC 0 3AC00790
004F 0 0000 OC 0 3AC00800
0050 0 0000 OC 0 3AC00810
0051 0 0000 DC 0 3AC00820
0052 0 0000 DC 0 3AC00830
0053 0 0000 DC 0 3AC00840
0054 0 0000 DC 0 3AC00850
0055 0 0000 DC 0 3AC00860
0056 0 0000 DC 0 3AC00870
0057 0 0000 OC 0 3AC00880
0058 0 0000 DC 0 3AC00890
0059 0 0000 OC 0 3AC00900
005A 0 0000 OC 0 3AC00910
0058 0 0000 DC 0 3AC00920
005C 0 0000 DC 0 3AC00930
0050 0 0000 DC 0 3AC00940
005E 0 0000 DC 0 3AC00950
005F 0 0000 DC 0 3AC00960
0060 0 0000 DC 0 3AC00970
0061 0 0000 DC 0 3AC00980
0062 0 0000 OC 0 3AC00990
0063 0 0000 OC 0 3AC01000
0064 0 0000 OC 0 3AC01010
0065 0 0000 DC 0 3AC01020
0066 0 0000 DC 0 3AC01030
0067 0 0000 DC 0 3AC01040
0068 0 0000 DC 0 3AC01050
0069 0 0000 DC 0 3AC01060
006A 0 0000 DC 0 3AC01070
0068 0 0000 DC 0 3AC01080
006C 0 0000 DC 0 3AC01090
006D 0 0000 DC 0 3AC01100
006E 0 0000 DC 0 3AC01110
006F 0 0000 DC 0 3AC01120
0070 0 0000 DC 0 3AC01130
0071 0 0000 DC 0 3AC01140
0072 0 0000 DC 0 3AC01150
0073 0 0000 OC 0 3AC01160
0074 0 0000 OC 0 3AC01170
0075 0 0000 OC 0 3AC01180
0076 0 0000 DC 0 3AC01190
0077 0 0000 DC 0 3AC01200
          *      3AC01210
          INPUT EQU /0028 SET INPUT ADDRESS 3AC01220
          *      3AC01230
          ***** 3AC01240
          *      3AC01250
          *      PAPER TAPE LOADER 3AC01260
          *      3AC01270
          LOAO X10 SENS-1 SENSE DSW 3AC01280
          ANO K0400 CHECK FOR READY 3AC01290
          0078 0 0827 8SC L MLC0,2 8R IF NOT READY 3AC01300
          0079 0 E02E 3AC01310
          007A 0 4C20 0156 LO INTAO 3AC01320
          007C 0 C02E 3AC01330
          0070 0 0340 STO 3 /40 INTERRUPT TR TABLE 3AC01340
          *      3AC01350
          *      READ TAPE RECORD AND PACK INTO 3AC01360
          *      LOCATIONS /0028 TO /0050 3AC01370
          *
          007E 0 6128 RDCO LOX 1 /28
```

THESE DC STATEMENTS  
ARE USED TO CLEAR CORE  
FDR CHECK SUM TOTAL

```
007F 0 6918          *      STX      1 STDRE&1
0080 0 6136          *      LDX      1 54
0081 0 1010          *      SLA      16
0082 0 0127          *      LDR01 STD  1 /27      CLEAR INPUT AREA
0083 0 71FF          *      MDX      1 -1
0084 0 70FD          *      MDX      LDR01
0085 0 081A          *      XIO      SENS-1  SENSE DSW
0086 0 E021          *      AND      K0400  CHECK FDR READY
0087 0 4C20 00AF     *      BSC      L NRDY,Z  BR IF NDT READY
0089 0 402A          *      LDR03 BSI      RDRLP  GO READ A CHAR
008A 0 C021          *      LD        CHAR    LOAD CHAR READ
008B 0 F018          *      EDR      K7F00   CHACK FDR DELETE
008C 0 4C18 0089     *      BSC      L LDR03,&- BR IF DELETE
008E 0 C01D          *      LD        CHAR    FIRST CHAR
008F 0 1808          *      SRA      8
0090 0 001C          *      STD      WDCNT   WORD COUNT
0091 0 4022          *      LDR04 BSI      RDRLP  READ A CHAR
0092 0 C019          *      LD        CHAR    LOAD THE CHAR RAAD
0093 0 1898          *      SRT      24      SHIFT TO LDW ORDER Q
0094 0 401F          *      BSI      RDRLP  READ SECNDND HALF-WORD
0095 0 C016          *      LD        CHAR    LOAD SECOND HALF
0096 0 18C8          *      RTE      8      SHIFT TO COMBINE HALVES
0097 0 D400 0000     *      STORE STD  L *-*   STORE PACKED WORD
0099 0 7401 0098     *      MDX      L STORE&1,1 INCRE STORE ADDRESS
0098 0 74FF 00AD     *      MDX      L WDCNT,-1 SKIP WHEN FINISHED
009D 0 70F3          *      MDX      LDR04
009E 0 6100          *      LDX      1 0      CLEAR XR1
009F 0 701F          *      MDX      CHHDR   BR TO CHECK HEADER
00A0 0 ECF0          *      KECFO DC      /ECFO
00A1 0 1F01          *      SENSR DC      /1F01      SENSE RESET
00A2 0 0C00          *      KOC00 DC      /0C00
00A3 0 1C10          *      STRDR DC      /1C10      START READER
00A4 0 7F00          *      K7F00 DC      /7F00
00A5 0 1F00          *      SENSE DC      /1F00
00A6 0 00AC          *      RDIN  DC      CHAR
00A7 0 1A00          *      DC        /1A00      READ A CHAR
00A8 0 0400          *      K0400 DC      /0400
00A9 0 0001          *      DNE2  DC      /0001
00AA 0 0028          *      ADRS  DC      INPUT
00AB 0 00B1          *      INTAD DC      INTE
00AC 0 0000          *      CHAR  DC      *-*
00AD 0 0000          *      WDCNT DC      *-*      WORD CDUNT
00AE 0 0000          *      DATA DC      *-*
00AF 0 30F8          *      NRDY  WAIT  -8      READER NDT READY
00B0 0 70CD          *      MDX      RD0CD  TRY AGIN
00B1 0 0000          *      DC        *-*
00B2 0 08ED          *      XID      SENS-1  SENSE RESET
00B3 0 7007          *      MDX      RDRL1
00B4 0 0000          *      RDRLP DC      *-*
00B5 0 08EC          *      XID      STRDR-1  START READER
00B6 0 08ED          *      XID      SENSE-1  SENSE DSW
00B7 0 E0E8          *      AND      KECFO   MASK PUNCH BITS
00B8 0 F0E9          *      EDR      KOC00   CHECK FDR BUSY,NRDY
00B9 0 4818          *      BSC      &-      SKIP IF ANY CHANGE
00BA 0 70FB          *      MDX      RDRLP&2  LOOP UNTIL CHANGES
00BB 0 08EA          *      RDRL1 XIO      RDIN   READ A CHAR
```

3AC01380  
3AC01390  
3AC01400  
3AC01410  
3AC01420  
3AC01430  
3AC01440  
3AC01450  
3AC01460  
3AC01470  
3AC01480  
3AC01490  
3AC01500  
3AC01510  
3AC01520  
3AC01530  
3AC01540  
3AC01550  
3AC01560  
3AC01570  
3AC01580  
3AC01590  
3AC01600  
3AC01610  
3AC01620  
3AC01630  
3AC01640  
3AC01650  
3AC01660  
3AC01670  
3AC01680  
3AC01690  
3AC01700  
3AC01710  
3AC01720  
3AC01730  
3AC01740  
3AC01750  
3AC01760  
3AC01770  
3AC01780  
3AC01790  
3AC01800  
3AC01810  
3AC01820  
3AC01830  
3AC01840  
3AC01850  
3AC01860  
3AC01870  
3AC01880  
3AC01890  
3AC01900  
3AC01910  
3AC01920  
3AC01930  
3AC01940  
3AC01950  
3AC01960  
3AC01970  
3AC01980  
3AC01990  
3AC02000  
3AC02010  
3AC02020  
3AC02030  
3AC02040  
3AC02050

00BC 0 08E3  
00BD 0 4CC0 00B4

00BF 0 C12A  
00C0 0 4C18 0156  
00C2 0 E03F  
00C3 0 903F  
00C4 0 4C18 0106  
00C6 0 903C  
00C7 0 4C18 0104

00C9 0 C129  
00CA 0 4C18 00D8

00CC 0 C034  
00CD 0 62CA  
00CE 0 825E  
00CF 0 4802  
00D0 0 80D8  
00D1 0 7201  
00D2 0 70FB

00D3 0 80D5  
00D4 0 4C20 0158

00D6 0 7401 0101

00D8 0 C12A  
00D9 0 1008  
00DA 0 1808  
00DB 0 D12A  
00DC 0 4C18 010A

00DE 0 8128  
00DF 0 8400 015D  
00E1 0 9400 015F  
00E3 0 4C10 015A

XID SENS-1  
BOSC I RDRLP

```
*
*
*
* *****
*      CHECK HEADER
* *****
* THIS RT DETERMINES WHETHER THE DATA CARD IS
* 1 ABSOLUTE HDR CARD 2 RELOCATABLE HDR CARD
* -----
* CHHDR LD      1 INPUT&2  CK FDR HOR CARDS
*      BSC      L MLC0,&-  BR TO USER - BLANK CD
*      AND      LB20
*      S        LB25
*      BSC      L ABHE0,&-  BCH IF ABSOL HEAD CARD
*      S        LB25
*      BSC      L RLHE0,&-  BCH IF RELDC HEAD CARD
*
* *****
*      CHECK SUM
* *****
* THIS ROUTINE ADDS COLUMNS 0 - 72
* TO CHECK THAT THIS SUM PLUS THE CARD
* SEQUENCE NUMBER EQUALS ZERO .
* -----
* LD      1 INPUT&1  LO CHECK SUM
* BSC      L CKEOP,&-  SKIP CKSUM IF ZERO
*
* LD      CDCT
* LDX      2 -54
* CKSM1 A      2 INPUT&54  ADD WORDS 1 TO 54
*      BSC      C
*      A        ONE2
*      MDX      2 1
*      MDX      CKSM1
*
* A        DNE2
* BSC      L CKSUM,Z  BR IF CK SUM ERR
*
* MDX      L CDCT,1  ADD 1 TO CARD CT
*
* -----
* CHECK FOR END OF PROGRAM CARD
* -----
* CKEOP LD      1 INPUT&2  GET WORD CDUNT
*      SLA      8      CLEAR CARD CODE
*      SRA      8
*      STO      1 INPUT&2  SAVE WORD CDUNT
*      BSC      L EOP,&-  EOP IF WC # ZERD
*
* -----
* CHECK FOR DVER CORE
* -----
* A      1 INPUT      SUM WC&STO ADORS&RELOC
* A      L UPPER
* S      L ULIM
* BSC      L OVCR,-  BR IF OVER CORE
*
* *****
*      RELDCATE AND STDRE
* *****
* THIS RT PLACES DATA FIELDS INTO THE CORRECT
* CDRE LOCATIONS AND ADDS IN A RELOCATION
```

3AC02060  
3AC02070  
3AC02080  
3AC02090  
3AC02100  
3AC02110  
3AC02120  
3AC02130  
3AC02140  
3AC02150  
3AC02160  
3AC02170  
3AC02180  
3AC02190  
3AC02200  
3AC02210  
3AC02220  
3AC02230  
3AC02240  
3AC02250  
3AC02260  
3AC02270  
3AC02280  
3AC02290  
3AC02300  
3AC02310  
3AC02320  
3AC02330  
3AC02340  
3AC02350  
3AC02360  
3AC02370  
3AC02380  
3AC02390  
3AC02400  
3AC02410  
3AC02420  
3AC02430  
3AC02440  
3AC02450  
3AC02460  
3AC02470  
3AC02480  
3AC02490  
3AC02500  
3AC02510  
3AC02520  
3AC02530  
3AC02540  
3AC02550  
3AC02560  
3AC02570  
3AC02580  
3AC02590  
3AC02600  
3AC02610  
3AC02620  
3AC02630  
3AC02640  
3AC02650  
3AC02660  
3AC02670  
3AC02680  
3AC02690  
3AC02700  
3AC02710  
3AC02720  
3AC02730



```
* FACTOR IF REQUIRED.
*-----
00E5 0 C128      LD 1 INPUT      LD STORE ADORS
00E6 0 8400 015D  A L UPPER      RELOCATE STORE ADORS
00E8 0 D00B      STO STOR4&1
00E9 0 6600 002B  LDX L2 INPUT&3  XR2 # RELOCATION CODE ADORS
*
00EB 0 63F8      STOR1 LDX 3 -8      XR3# REL BIT CNT
*
00EC 0 C200      LD 2 0          LD NEXT RELOCATION CODE
00ED 0 1800      RTE 16          STO IN EXT REG
00EE 0 1082      STOR2 SLT 2        BRING IN NEXT REL BIT
00EF 0 4C04 00FE  BSC L STOR6,E    BR IF RELOCATE
*
00F1 0 1810      SRA 16
00F2 0 8131      STOR3 A 1 INPUT&9  ADD NEXT WORD
00F3 0 D500 0000  STOR4 STO L1 *-*      STO IN PROGRAM
00F5 0 74FF 002A  MDX L INPUT&2,-1  DECR WORD CNT
00F7 0 7001      MDX STOR5        SKIP WHEN WC # 0
00F8 0 607E      LDX RDCD        FINISHED
*
00F9 0 7101      STOR5 MDX 1 1      ADV WORD AND STO ADORS
00FA 0 7301      MDX 3 1          ADV REL BIT CNT
00FB 0 70F2      MDX STOR2        ADV TO NXT RELOC WD
00FC 0 7201      MDX 2 1
00FD 0 70ED      MDX STOR1
*
00FE 0 C400 015D  STOR6 LD L UPPER    LD RELOC FACTOR
0100 0 70F1      MDX STOR3        GO RELOC ADORS
*
0101 0 0000      CDCT DC *-*
0102 0 0FC0      LB20 DC /0F00
0103 0 0100      LB25 DC /0100
*
*****
* HEADER AND EOP CARDS
*****
*-----
* THIS RT. HANDLES RELOCATABLE HDR CARDS.
*-----
0104 0 C057      RLHED LD NLOC      COMPUTE RELOC FACTOR
0105 0 9058      S RLBA
*
*-----
* THIS RT. HANDLES ABSOLUTE HDR CARDS.
*-----
0106 0 0056      ABHED STO UPPER
0107 0 7101      MDX 1 1          INITIALIZE CARD COUNT
0108 0 69F8      STX 1 CDCT
0109 0 607E      LOX RDCD
*
*-----
* THIS ROUTINE HANDLES END OF PROGRAM CARDS
*-----
010A 0 C128      EOP LD 1 INPUT
010B 0 8051      A UPPER
010C 0 D04F      STO NLOC      SET NEXT AVAIL LOC
010D 0 C12B      LD 1 INPUT&3  LO TRANSFER ADORS
010E 0 804E      A UPPER
010F 0 D001      STO EOP1&1
0110 0 4C00 0000  EOP1 BSC L *-*      TRANSFER TO PROGRAM
*
*****
* HEX DATA ROUTINE
```

3AC02740  
3AC02750  
3AC02760  
3AC02770  
3AC02780  
3AC02790  
3AC02800  
3AC02810  
3AC02820  
3AC02830  
3AC02840  
3AC02850  
3AC02860  
3AC02870  
3AC02880  
3AC02890  
3AC02900  
3AC02910  
3AC02920  
3AC02930  
3AC02940  
3AC02950  
3AC02960  
3AC02970  
3AC02980  
3AC02990  
3AC03000  
3AC03010  
3AC03020  
3AC03030  
3AC03040  
3AC03050  
3AC03060  
3AC03070  
3AC03080  
3AC03090  
3AC03100  
3AC03110  
3AC03120  
3AC03130  
3AC03140  
3AC03150  
3AC03160  
3AC03170  
3AC03180  
3AC03190  
3AC03200  
3AC03210  
3AC03220  
3AC03230  
3AC03240  
3AC03250  
3AC03260  
3AC03270  
3AC03280  
3AC03290  
3AC03300  
3AC03310  
3AC03320  
3AC03330  
3AC03340  
3AC03350  
3AC03360  
3AC03370  
3AC03380  
3AC03390  
3AC03400  
3AC03410

0112 0 D036  
0113 0 C400 00AA  
0115 0 D400 00AE  
0117 0 C480 00AE  
0119 0 D038  
011A 0 7401 00AE  
  
011C 0 C031  
011D 0 0032  
011E 0 1810  
011F 0 1004  
0120 0 D02C  
0121 0 1810  
0122 0 D02E  
0123 0 C480 00AE  
0125 0 4C1B 007E  
  
0127 0 4C10 012B  
0129 0 7409 0151  
  
012B 0 1003  
012C 0 4C18 0135  
012E 0 7401 0151  
0130 0 4C28 0134  
0132 0 1001  
0133 0 70EA  
  
0134 0 C01C  
0135 0 E817  
0136 0 7401 00AE  
0138 0 74FF 0150  
013A 0 70E4  
  
013B 0 7400 0149  
013D 0 7007  
  
013E 0 801E  
013F 0 0009  
0140 0 C400 002E  
0142 0 4C98 0149  
0144 0 7002  
  
0145 0 7400 0152  
0147 0 8015  
0148 0 D400 0000  
014A 0 7401 0149  
014C 0 70CA  
  
014D 0 0000  
014E 0 0004  
014F 0 1402  
0150 0 0000  
0151 0 0000  
0152 0 0000  
0153 0 1000

```
*****
* THIS ROUTINE CONVERTS HEX CORRECTION
* DATA TO BINARY AND STORES THE DATA.
*-----
*
HEX STO HE22&1 CLEAR STORE ADORS
LD L ADORS
STO L DATA
HEX1 LD I DATA LOAD RELOCATION BIT
STO RLREQ STO RELOCATION BIT
MDX L DATA,1 ADV TO NXT WORD
*
*-----
* CONVERT HEX TO BINARY
*-----
*
HE10 LD FOUR
STO INDX1
SRA 16
HE11 SLA 4
STO TEMP
SRA 16
STO INDX2
LD I DATA CK FOR BLANK COLUMN
BSC L RDCD,&- FINISHED - LOAD NEXT CARD
*
BSC L HE11A,- BR IF NOT A-F
MOX L INDX2,9 ADD 9 FOR ALPHA
*
HE11A SLA 3 ELIMINATE ZONE BITS
BSC L HE14,&- XFER IF HEX CHAR # 0
MDX L INDX2,1
HE12 BSC L HE13,&Z XFER IF 8IT IS FOUND
SLA 1 PREPARE TO LK AT NEXT BIT
MDX HE12-2
*
HE13 LD INDX2 LOAD BINARY BITS
HE14 OR TEMP ADD TO PREVIOUS CHARS
MOX L DATA,1
MDX L INDX1,-1
MOX HE11
*
*-----
* FINISHED - CONVERTED WORD IN ACCUMULATOR
*
MDX L HE22&1,0 SKIP IF STO ADORS
MOX HE21 BR IF DATA
*
A UPPER RELOC STO ADORS
STO HE22&1
LO L INPUT&6 LD NXT WORD
BSC I HE22&1,&- BR TO ADORS IF BLANK
MDX HEX1 CONV NXT WORD
*
HE21 MDX L RLREQ,C SKIP IF NO RELOCATE
A UPPER
HE22 STO L *-* STORE DATA
MDX L HE22&1,1 ADV STO ADORS
MOX HEX1 CONV NXT WORD
*
*
TEMP DC *-* TEMP STORAGE
FOUR OC 4
EDCD OC /1402 FEED CARD
INOX1 DC *-*
INDX2 DC *-*
RLREQ OC *-* HEX RELOCATION BITS
NOP
```

3AC03420  
3AC03430  
3AC03440  
3AC03450  
3AC03460  
3AC03470  
3AC03480  
3AC03490  
3AC03500  
3AC03510  
3AC03520  
3AC03530  
3AC03540  
3AC03550  
3AC03560  
3AC03570  
3AC03580  
3AC03590  
3AC03600  
3AC03610  
3AC03620  
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3AC03650  
3AC03660  
3AC03670  
3AC03680  
3AC03690  
3AC03700  
3AC03710  
3AC03720  
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3AC03880  
3AC03890  
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3AC03910  
3AC03920  
3AC03930  
3AC03940  
3AC03950  
3AC03960  
3AC03970  
3AC03980  
3AC03990  
3AC04000  
3AC04010  
3AC04020  
3AC04030  
3AC04040  
3AC04050  
3AC04060  
3AC04070  
3AC04080  
3AC04090

```
0154 0 1000      NOP
0155 0 FFFF      OC      /FFFF      TAPE LOADER SWITCH
*
*
*
*****
*      MONITOR/LOADER INTERFACE
*****
* THE FOLLOWING MUST BE LOCATED IN CORE
* LOCATIONS /0156-/015F.
*-----*
0156 0 30F6      MLCD WAIT -10      PROGRAM SHOULD PLACE HERE
0157 0 70FE      MOX      MLCD      A XFER ON BLANK CARD
0158 0 30F7      CKSUM WAIT -9      CHECK SUM ERROR
0159 0 70FE      MOX      CKSUM
015A 0 3000      OVCR WAIT      EXCEEDED CORE SIZE
0158 0 70FE      MOX      OVCR
015C 0 0160      NLOC OC /160      NEXT AVAILABLE STORAGE LOC
015D 0 0000      UPPER DC *-*      RELOCATION FACTOR
015E 0 0000      RLBA OC 0000      BASE ADDRESS
015F 0 0000      ULIM OC *-*      CORE SIZE
*****
0160 0012      END      STRT
NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

3AC04100  
3AC04110  
3AC04120  
3AC04130  
3AC04140  
3AC04150  
3AC04160  
3AC04170  
3AC04180  
3AC04190  
3AC04200  
3AC04210  
3AC04220  
3AC04230  
3AC04240  
3AC04250  
3AC04260  
3AC04270  
3AC04280  
3AC04290  
3AC04300  
3AC04310  
3AC04320  
3AC04330

```
AB HED 0106 00C 4
ADRS 00AA 0113
CDCT 0101 00C C 0006 0108
CHAR 00AC 008A 008E 0092 0095 00A6
CHHDR 008 F 009F
CHKSM 001B
CKEOP 0008 00CA
CKSM1 00CE 0002
CKSUM 0158 0004 0159
CORE 0028 0017 001A
CORE2 0030 0035
CORE3 003F 0038
CSADD 0013 0015
DATA 00AE 0115 0117 011A 0123 0136
EOP 010A 000C
EOP1 0110 010F
FDC0 014F
FOUR 014E 011C
HEX 0112
HEX1 0117 0144 014C
HE10 011C
HE11 011 F 013A
HE11A 0128 0127
HE12 0130 0133
HE13 0134 0130
HE14 0135 012C
HE21 0145 0130
HE22 0148 0112 0138 013F 0142 014A
INDX1 0150 011D 0138
INDX2 0151 0122 0129 012E 0134
INPUT 0028 00AA 00BF 00C9 00CE 0008 0008 00DE 00E5 00E9 00F2 00F5 010A 010D
0140
INTAD 00AB 007C
INTE 0081 000C 002A 00AB
KECF0 00A0 0087
KOC00 00A2 0088
KO400 00A8 0079 0086
K7F00 00A4 0088
LB20 0102 00C 2
LB25 0103 00C 3 00C 6
LDR01 0082 0084
LDR03 0089 008C
LDR04 0091 009D
LOAD 0078
MLCD 0156 007A 00C0 0157
NLOC 015C 002E 0104 010C
NRDY 00AF 0087
ONE2 00A9 0000 0003
OVCR 015A 00E3 0158
RDCD 007E 0042 0080 00F8 0109 0125
ROIN 00A6 008B
RDRLP 00B4 0089 0091 0094 008A 008D
RDRL1 008B 00B3
RLBA 015E 0105
RLHED 0104 00C 7
RLREQ 0152 0119 0145
SENSE 00A5 0086
SENSR 00A1 0078 0085 0082 008C
STORE 0097 007F 0099
STOR1 00EB 00F0
STOR2 00EE 00F8
STOR3 00F2 0100
STOR4 00F3 00E8
STOR5 00F9 00F7
STOR6 00FE 00EF
STRDR 00A3 0085
STRT 0012 0000 0160
TEMP 014D 0120 0135
```

IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1130 SYSTEM  
PAPER TAPE RELOCATABLE LOADER

PART NO. 2191286  
PAGE 5

ULIM 015F 003A 003C 003F 00E1  
UPPER 015D 00DF 00E6 00FE 0106 010B 010E 013E 0147  
WDCNT 00AD 0090 0098  
W30F4 003E  
END OF ASSEMBLY

----- LAST PAGE -----